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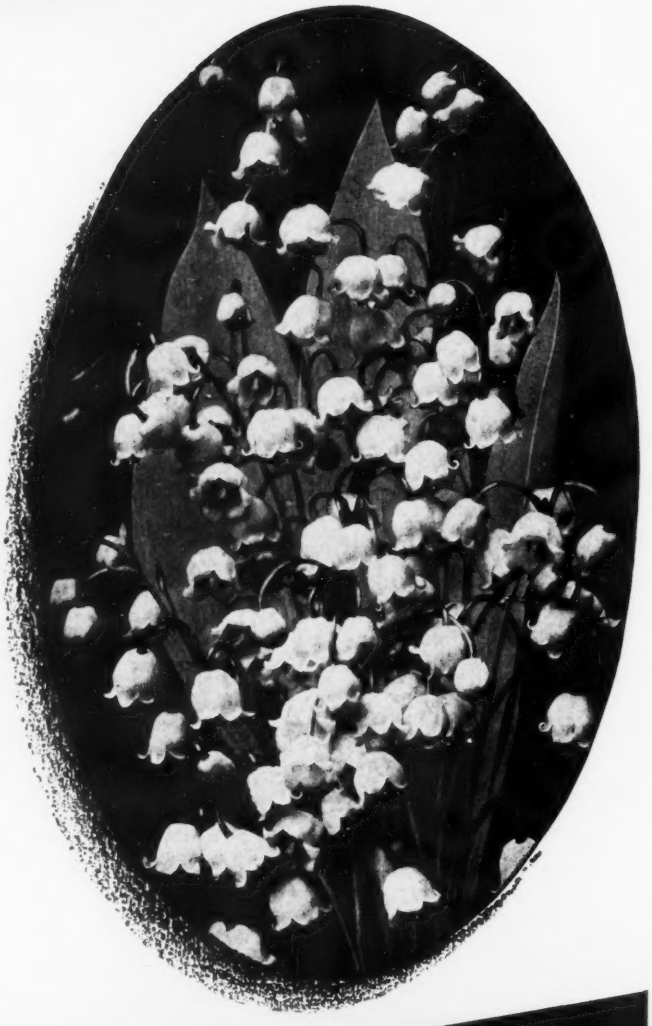

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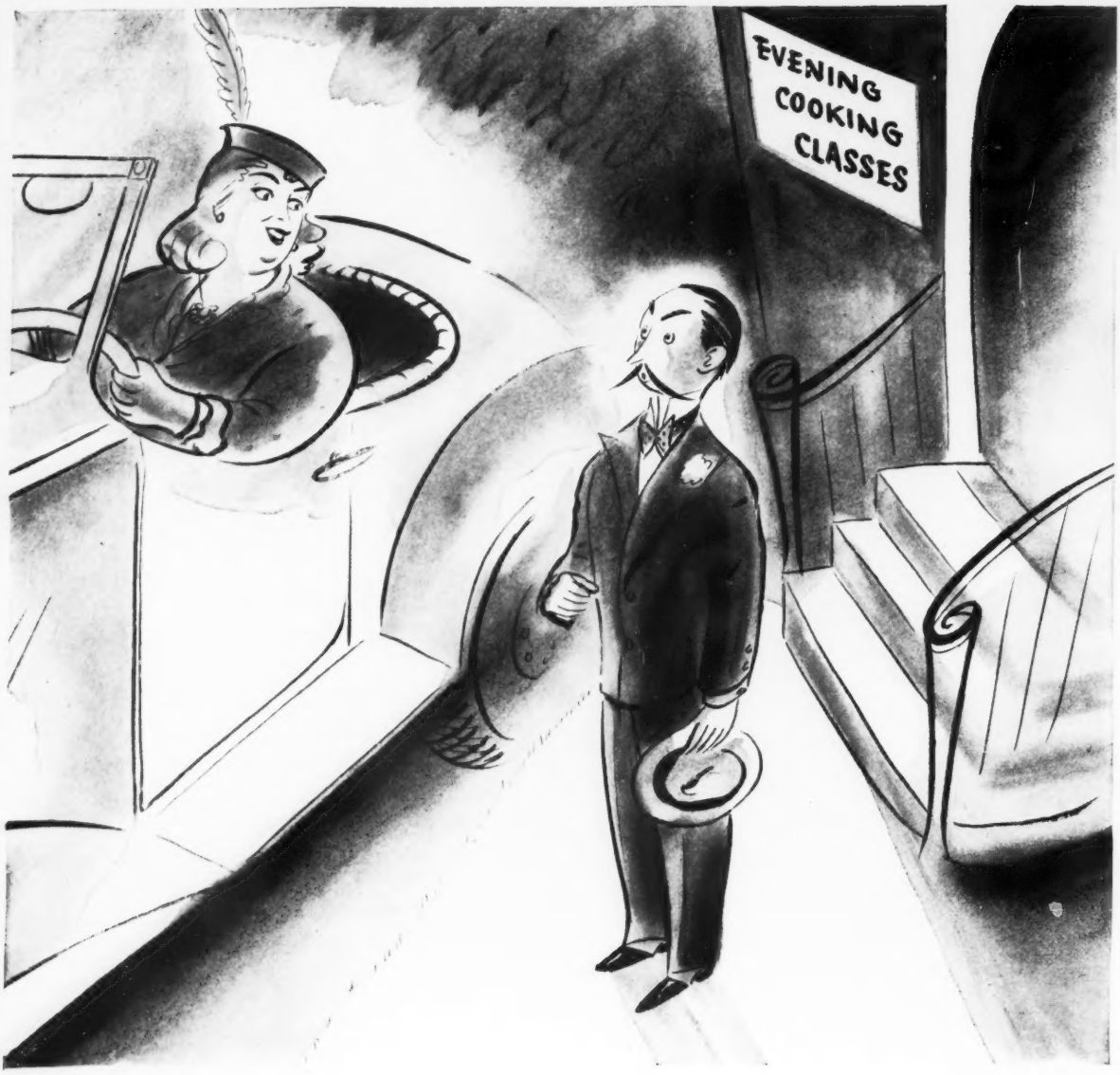

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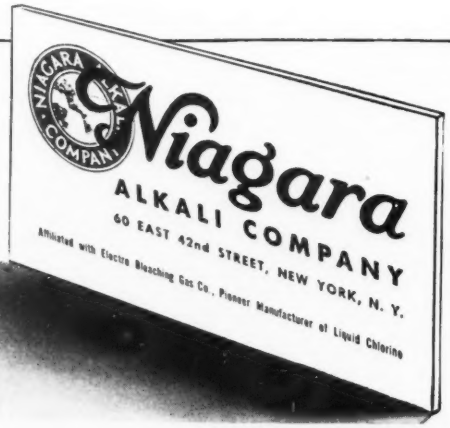

Soap and Sanitary Chemicals

Volume XV
Number 9

Reg. U. S. Pat. Office

SEPTEMBER 1939

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SANITARY Products Section, which forms a part of every issue of SOAP, begins on page 71.

ABP

Contents

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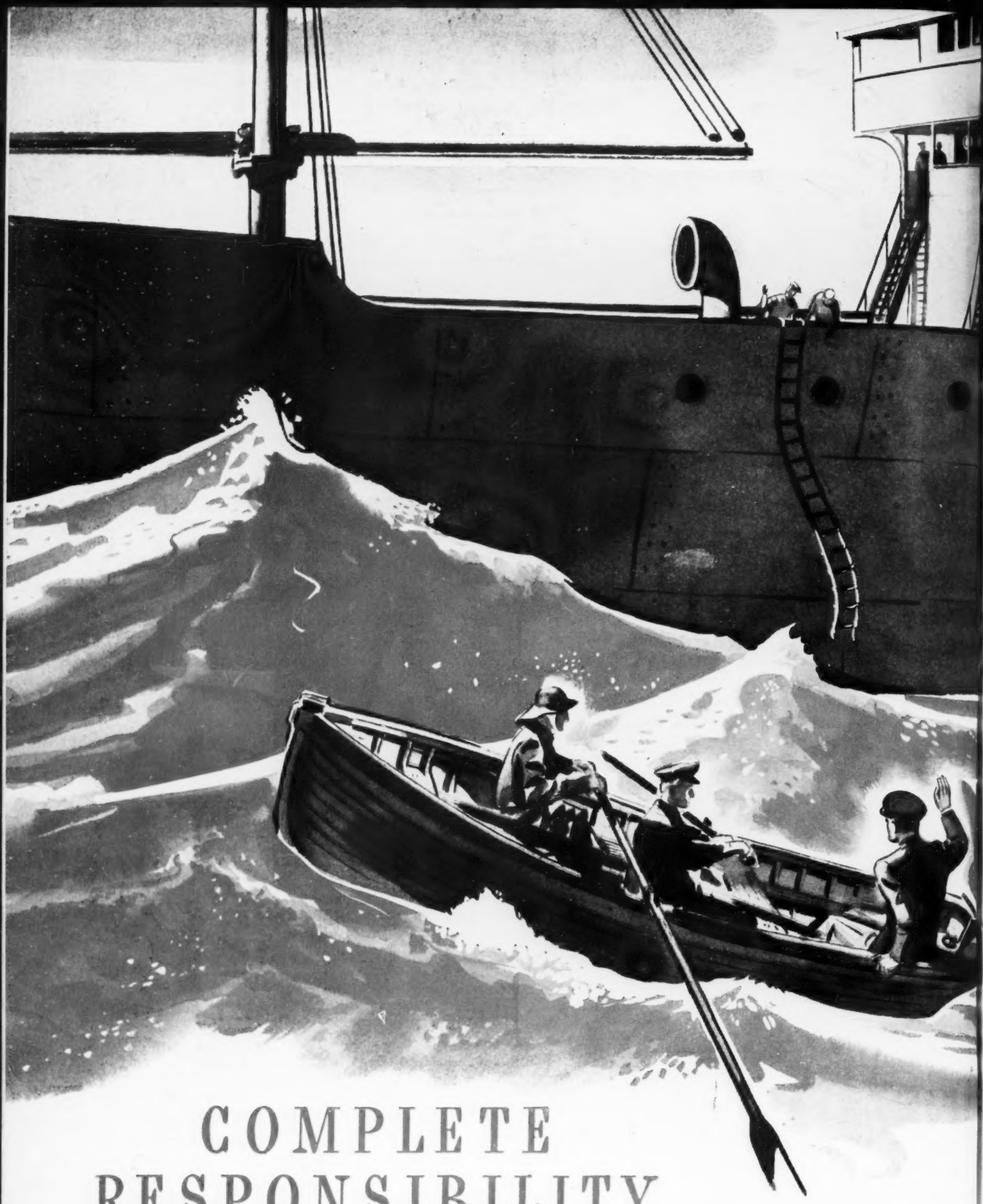

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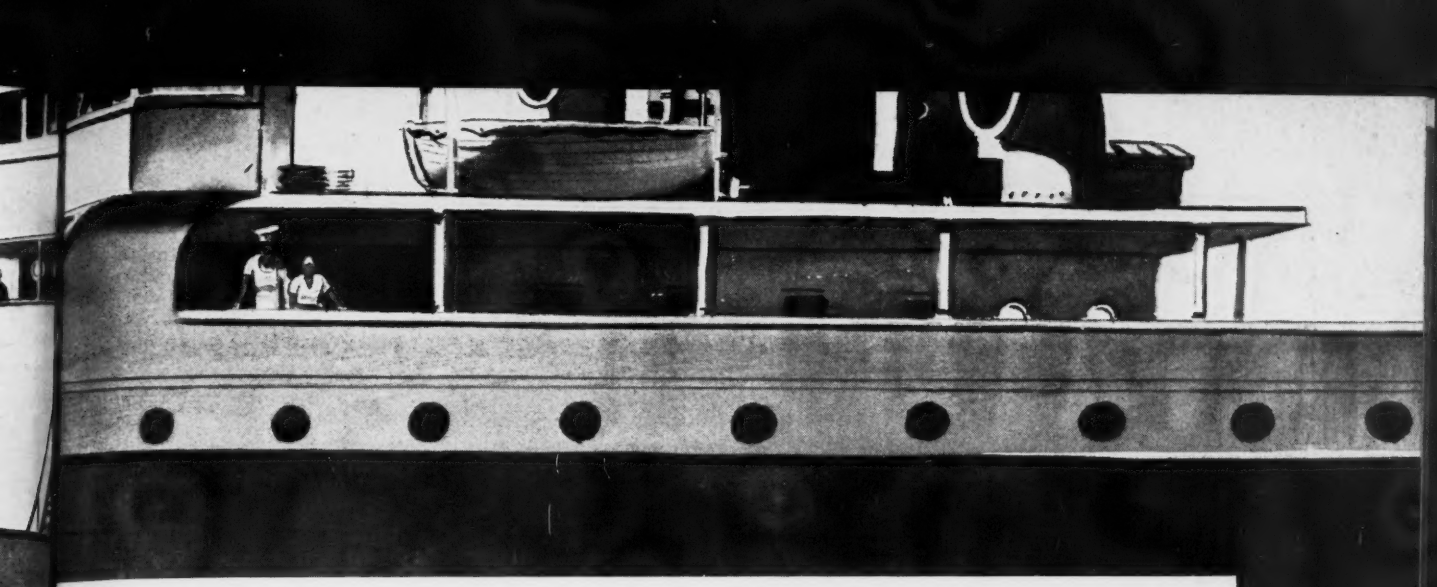

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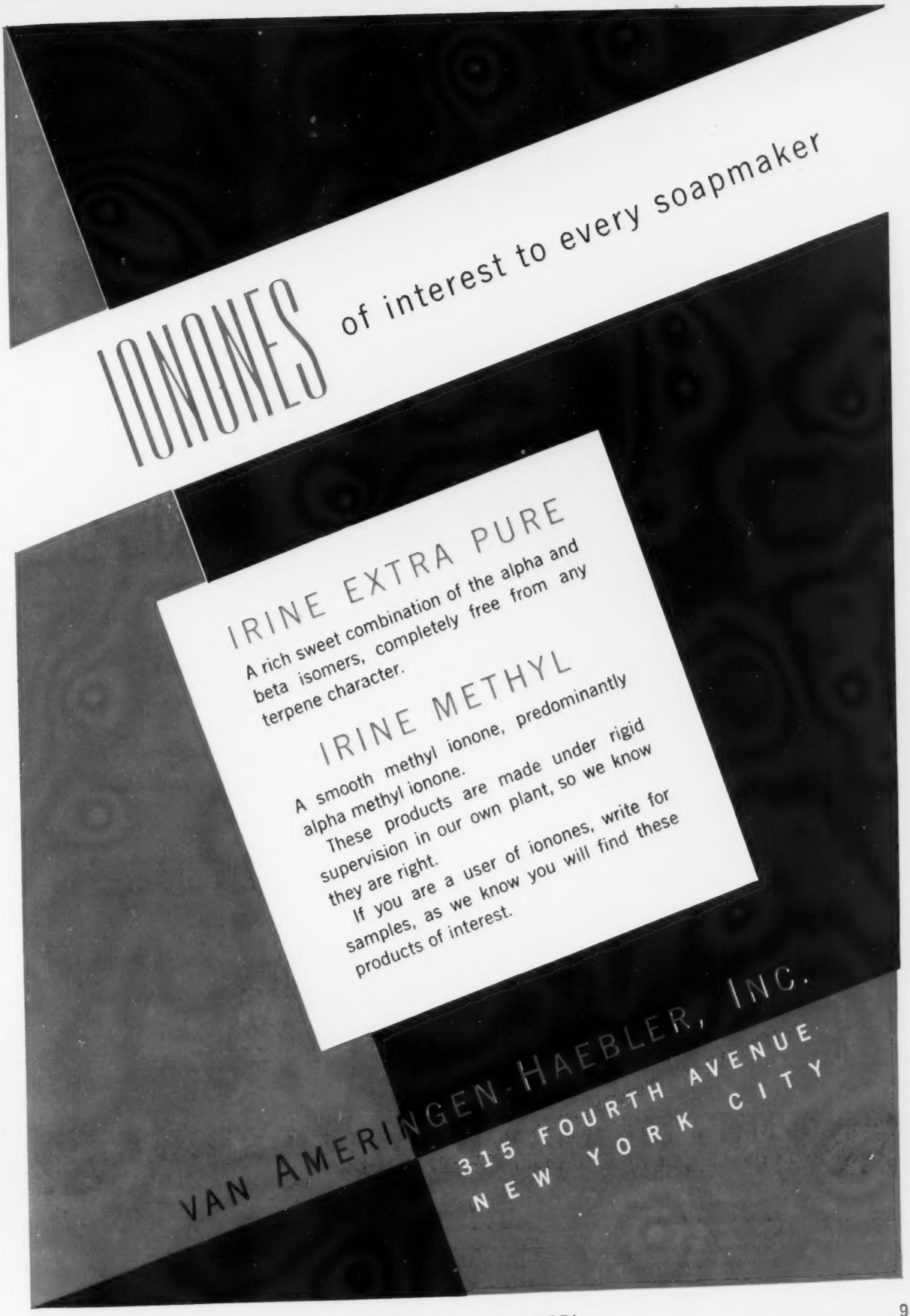
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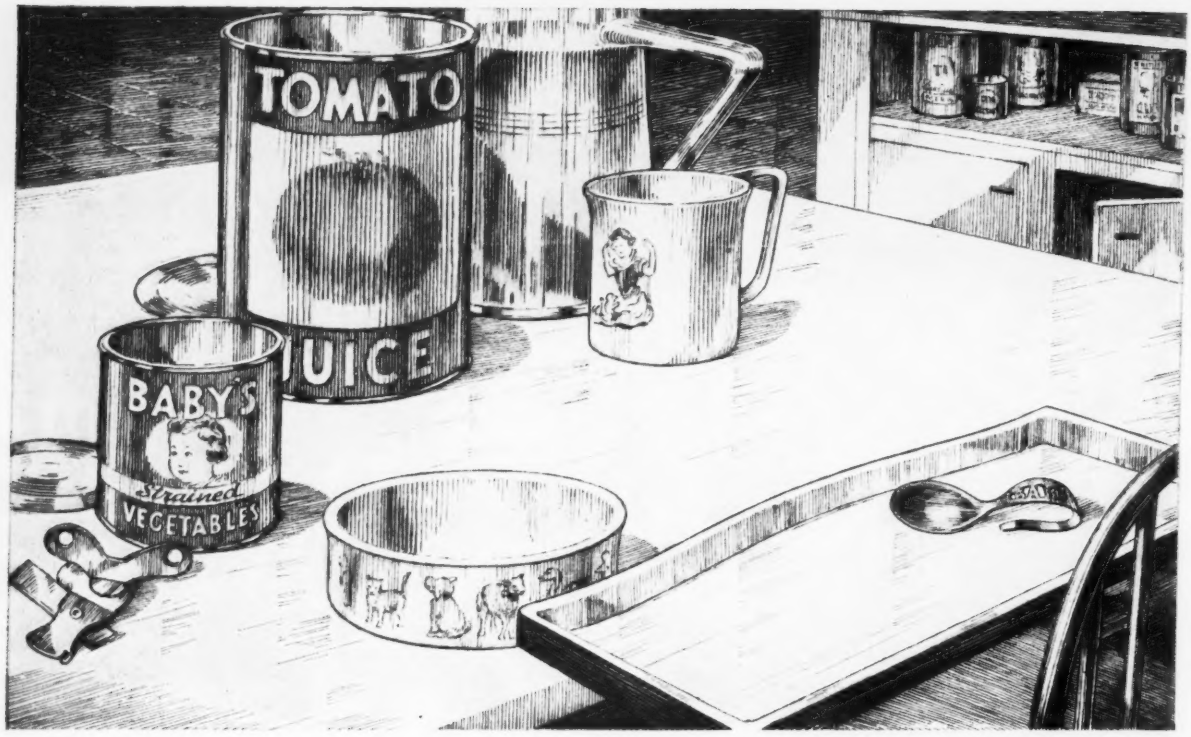

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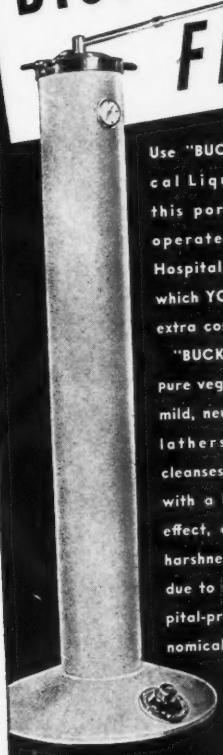

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As the Editor sees it..

WITH war clouds hanging dark over Europe, glycerine bids fair to become again a war commodity and to lose its peaceful civilian identity. In the World War, it was an object of intense production activity and frenzied speculation. Its price rose to unprecedented heights and just as quickly dropped again. Today, almost a quarter-century later, glycerine faces a somewhat different technical situation. The advances in fat chemistry and in synthetic chemical processes generally should mean the ready availability of a greater tonnage of glycerine if and when it be required. The chances of a more adequate production and avoidance of prices skyrocketing to six and eight times normal levels appear much greater today than they did twenty-odd years ago.

OPPOSING an appropriation for building a soap plant at the North Carolina state prison, a member of the state board of awards pointed out that the manufacture of soap is a highly technical process, and that its manufacture in a prison plant would cost more than a better product could be bought for on the open market. These are words of wisdom,—but will they be heeded? Probably not. Other states have ignored the same kind of sensible advice in the past. The fact that savings on soap manufacture in prison plants are negligible or nonexistant does not seem to matter. Neither does the fact that better products can be bought to advantage on the open market. The proponents say that the idea is to give more men in prisons useful work which can save the state money. But soap plants are extremely small users of labor as everybody knows. Then why a prison soap plant at all?

THE present depressed condition of the oil and fat markets is receiving closer attention from the Department of Agriculture and Secretary Wallace. Pressure from the dairy group and some members of Congress for an export subsidy on oils and fats is reported to have been rejected by the Secretary. It is also reported that the Department of Agriculture has under consideration a plan for (1) diversion of some fats from food use to the soap kettle, (2) purchase of lard and pork for distribution to the needy, (3) increasing exports by financing through the Export-Import Bank.

We can understand how the Government might purchase excess pork and give it to the poor, and also how it might "sell" oils and fats abroad by advancing the money to the foreigners to pay for the fats when they get them. But just what Mr. Wallace means by "diverting" certain food fats to the soap kettle is not quite clear. We have always noticed that when the price of any fat, food or otherwise, gets low enough, it finds its way to the soap kettle in quantities proportionate with the lowness of the price. Any deliberate "diverting" is unnecessary. If the price is low, soapers will buy it, and if the price is too high, they cannot buy it. If there is too much fat for people to eat, or to be ex-

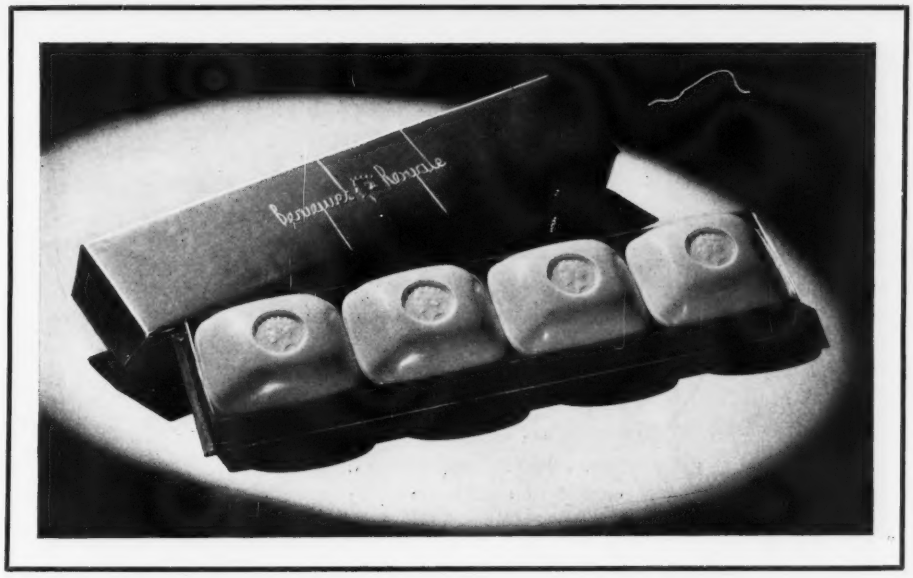
ported to countries which can buy it, the pressure of supplies is always in the direction of non-food uses, of which the soap kettle is the most important. So what does Mr. Wallace mean by "diversion of fats to soap uses?" Internal subsidy?

JUST how much benefit does the average soap manufacturer secure from depressed prices for oils and fats? Only last week, a soaper stated to us that any firm which could not make money based on present raw material costs, had no right to be in business. At the same time, another manufacturer told us that he made a better margin of profit when coconut oil and tallow were twice their present prices. He pointed out that today no matter how low oil prices go, there is always somebody ready to cut soap prices immediately to levels in line with the oil market. And the same is true in a rising oil market, some manufacturers being willing to sell at figures based on their inventory costs and not on the current replacement market. If what we hear from soapers is a fact, about the only advantage of low oil prices is less money tied up in inventories. Competition appears to be such that it does not allow much leeway in widening profit margins irrespective of the oil and fat market.

CALLING on manufacturers to reduce their prices of goods sold in drug stores,—this might include anything from lawnmowers to a tuna-fish sandwich,—so that both the wholesale and retail druggist "can make a living," the National Association of Retail Druggists says that it is about time that manufacturers began to "realize that the war is over." Going on to say that druggists are still paying war-time prices for their goods, the Association states: "And why? Just because manufacturers generally have been unreasonably selfish."

When we consider the dozens of so-called pharmacy laws which retail druggist associations the country over have attempted to push through state legislatures restricting to pharmacists the sale of everything even remotely resembling a drug or chemical, this use of the term, "unreasonably selfish," appears somewhat ill-chosen. Furthermore, such evidence with which we are familiar is against the druggists' contention that they are paying "war-time prices." It is altogether a possibility that if the retail druggists would quit slitting each others' throats, and quit trying to legislate business and prosperity into their stores, they would have more time and energy to concentrate on selling their goods at a profit. In this case, they are simply trying to place the blame for their own shortcomings on the manufacturer.

CHECKING up on sales in the local market, we find that shampoos, like "emergency" taxes, are quite definitely on the rise. More and more people as time goes on are washing their hair with products designed especially for the purpose. In about half of the urban homes of the nation where not so many years back regular toilet soap served also as a shampoo, steadily expanding quantities of shampoo, 98 per cent of which is liquid, are being consumed. And we note that not only is the sale of shampoo per person growing each year, but that the number of shampoo users is also increasing. During recent months, we have found that liquid soap shampoos have begun to outstrip the soapless variety in their rate of sales growth, although both types continue to show a steady expansion in demand. Yes, we must admit that it appears as though shampoos which not so many years ago were suspected of being a fad of the effete, are here to stay!



SUPERFATTING

What it can and cannot accomplish in practical toilet and shaving soap manufacture

By John Glenn

Birmingham, England

SUPERFATTED soap was originally introduced as the result of a misconception. It was known that an excess of alkali in a soap caused skin irritation. So it was assumed that an excess of fat, remaining unsaponified, would yield a soap quite free from this defeat. Today, soap chemists know that the dissociation of a superfatted soap and the production of an alkaline pH on solution in water is only negligibly lower than that of a neutral soap of the same composition, and that true "mildness" is not achieved by superfatting, but by a suitable fat content and proper manufacture.

Yet superfatting does confer other desirable properties on soap, especially toilet soap, and the lack of attention given to superfatting technique is rather to be regretted. The desirable characteristics of a soap containing excess fat can also be produced (and the undesirable ones eliminated) by adding one or more of a number of substances of a fatty nature to a neutral soap base. Therefore for the purpose of this discussion a superfatted soap is one which contains a small proportion of fat, oil or related substance designed to improve its texture or detergent properties.

Before discussing superfatting agents and methods of superfatting, it would be well to mention some of the actual advantages gained. These are:—

1. The presence of saponifiable superfat insures neutrality.
2. Certain agents reduce the tendency of milled soap to split or crack in use.
3. The process of milling and plodding is often made easier as the soap is rendered more plastic.
4. The lather produced is usually smoother and closer, and the tablet in use has a velvety feel superior to that of a straight soap.
5. The superfat agent can act as a solvent or excipient for medicaments or other additives to the soap.

Above: Superfatted toilet soaps usually have a better feel and a much improved appearance.

It is well known that in practice the presence of free alkali tends to inhibit rancidity, and that fats which usually give trouble do so more readily if their soaps are finished dead neutral. The natural conclusion from this is that an excess of fat will stimulate rancidity, and this belief has probably done much to make manufacturers chary of preparing soaps such as those suggested

by Dr. Unna, containing up to 4 per cent free tallow or olive oil. The author's opinion is that the presence of unsaponified fat is regarded as a greater evil in this connection than it actually is. Certainly a large number of analyses made on soaps of varying rancidities shows that they are as frequently free from excess fat as otherwise. This excess fat, escaping saponification in the normal course of soap-boiling, is invariably composed of the higher saturated fatty acid esters which are usually quite free from any tendency to go "off".

In the course of experiments made originally to investigate the phenomenon of cracking, it was found that pure olive oil milled into a base of known high stability did not produce rancidity over a period of eight months. We may safely conclude that given a suitable soap base and reasonable care in the selection of superfatting agents, the practice does not result in products of a greater tendency to rancidity or discoloration than ordinary neutral soaps. In fact, certain additives such as lanolin may even act as stabilizers.

Apart from textile or other soaps for special purposes, the product which benefits most by being superfatted is milled toilet soap. Ordinary household and cleansing soaps are usually finished with a slight excess of alkali, and scarcely enter into consideration. Undoubtedly the easiest and most satisfactory method is to incorporate the superfatting agent, whatever nature, in the mixing and milling stage.

The obvious method of using insufficient alkali to secure complete saponification of the fat charge in the boiling process is not advisable. The presence of traces of unsaponified fat, as previously pointed out, is not a disadvantage, but an amount of the order required to confer the desirable "superfatted" properties, i.e. at least 1 per cent, is likely to make the soap difficult to fit, and slows down the separation of nigre. In any case the analytical control required to secure uniformity will be complicated. It is much easier to make a neutral soap and add 1 per cent of fat than it is to finish a soap with 1 per cent excess. Apart from these considerations, the procedure would limit the superfat to a proportion of the original fat-charge, which may not and probably will not be suitable. During the boiling process in any case, the large excess of fat would tend to hydrolyze and produce free fatty acids, which are usually undesirable ingredients in a toilet soap, especially as they have a greater tendency to rancidity.

If a fat or oil is to be added to a soap, it must be of the finest quality obtainable, one which will not on its own account go rancid over a long period of time. Non-saponifiable ingredients, such as mineral oil or petroleum jelly, should be chosen with equal care, as they, too, may develop a bad odor. If these conditions are fulfilled, there is no great chance of their causing trouble when incorporated in soap. Certain substances, citral for instance, definitely become more unstable in soap, but all the substances that can conceivably be grouped together as superfatting agents find their stability practically unaffected.

Clearly, the addition of any substance in the milling stage obviates even the remote possibilities of initiating reactions of oxidation, etc., for which the soap medium will afterwards be blamed. Certain precautions, however, are necessary to secure thorough incorporation, and this is specially true of semi-solid ingredients such as lanolin. This latter substance, added as such to soap chips before milling, usually distributes itself through the soap mass in small particles easily visible to the eye, which give the finished soap a freckled appearance.

An easy way of overcoming this is to form a temporary emulsion of the superfatting agent with water before adding. All that is necessary with lanolin and the majority of oils is to melt (or warm if liquid) and pour with agitation into hot water containing a little dissolved or liquid soap. It also saves time and trouble if the perfume is added to the melted superfatting agent before emulsifying. This procedure also assists the emulsification of mineral oils or petroleum jelly, as most perfumes disperse fairly readily.

Advantages of Superfatting

FROM the initial mixture onwards, the advantages of the superfat become apparent. The soap chips, incorporating one or two per cent of a fatty emollient substance, pass more easily through the mill, an effect very noticeable in cold weather, and the mill ribbons compact more readily in the plodder. If capacity dies which entail considerable "spread" or distortion of the soap billet during stamping are employed, the presence of a superfat, especially lanolin, reduces considerably the number of tablets which crack after a short storage. Solution of the perfume in the superfat as previously mentioned also results in a much more thorough dispersion of the essential oils throughout the soap mass, the fatty matter acting as a diluent. It is also obvious that the perfume thus dissolved and dispersed will evaporate more slowly, so that the soap will retain its odor over a greater period.

Perfumes sensitive to air or alkali, which normally are expected to discolor in a soap, usually appear to be more stable when thus incorporated, and the progressive darkening or rancidity is slowed up although not prevented. The effect is very noticeable with cheap verbena perfumes, a soap containing ½% is markedly superior in keeping qualities when the perfume is dissolved in twice its weight of lanolin before addition to the milling base.

In use superfatted soap is smoother and the lather acquires the velvet texture that is characteristic of the best toilet soaps. Lanolin, vegetable lecithin and sulfonated oils are excellent additives for this purpose, and all three tend to postpone the appearance of cracks in toilet tablets. (In this connection, the author has yet to see a tablet of milled toilet soap that will not crack if

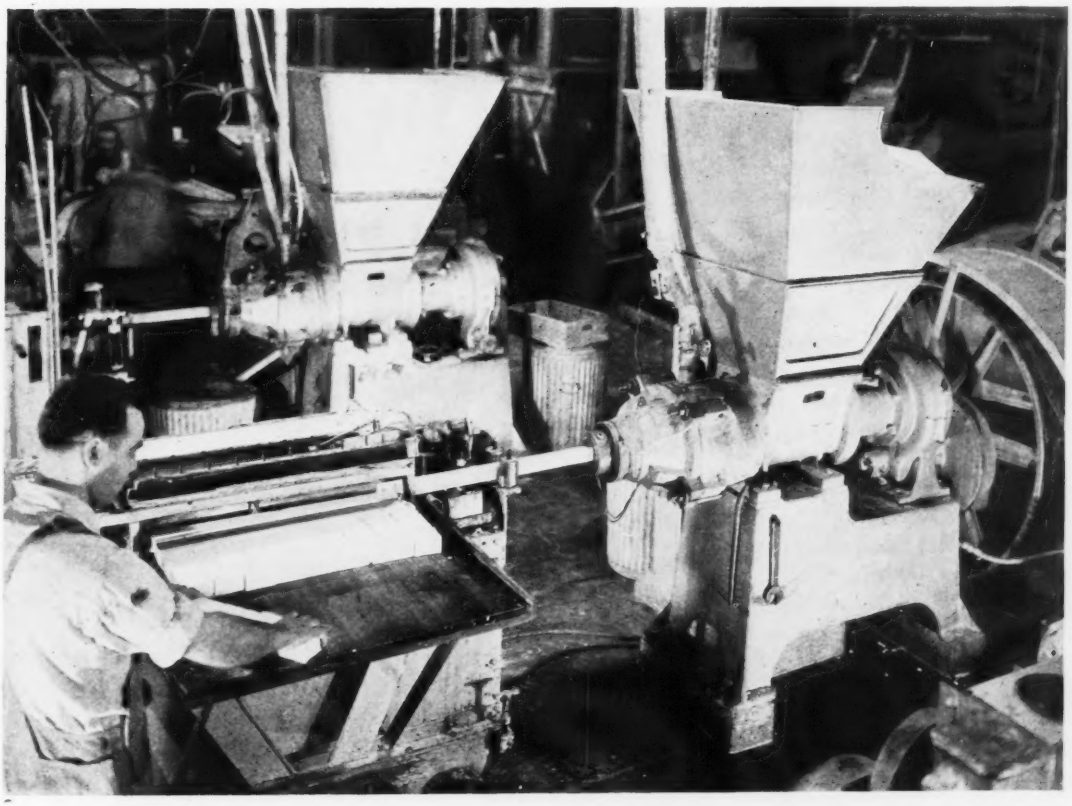
alternately dried and left soaking in water: the best tablets are the oldest, but even these are not immune). It will be noted that these three substances are in various degrees hydrophilic, and it is to be expected that other oil bodies will give different results as superfatting agents. Actually, mineral and saponifiable oils, especially the former, always tend to reduce the lather if added in any proportion above 1%, although in small percentages they too will improve the texture of the soap in use. Their chief advantage as ingredients in toilet soap is to impart glossiness. There are also several proprietary superfatting agents obtainable, most of which belong to the first class given above and which produce similar results. Some of these will be mentioned later.

In concluding this general discussion on superfatting, it must be pointed out that the advantage claimed by those who make and sell superfatted soap to the public, that of improved emolliency, is rather doubtful. The agent is distributed through the soap.—and, more to the point, through the lather.—as tiny globules, or in other words as a o/w emulsion. Unlike fatty lotions of the complexion milk type, this emulsion does not dry out and break down on the skin so that the emollient may be absorbed, but is rinsed away almost immediately. The true advantages from the washing standpoint are smoothness and, with vegetable or animal oils, an assurance of neutrality. When large proportions of oil are added, in addition it appears that the soap becomes more efficient in removing grease, as to a certain extent the dispersed matter comes into contact with the soil and acts as a solvent. Light petroleum oils or even gasoline have been advocated and used for this purpose, but scarcely come into consideration here.

Lanolin

LANOLIN or wool wax, the natural grease from the hair follicles of the sheep, is almost the ideal superfatting agent in its refined anhydrous state. It possesses a fairly pronounced and characteristic smell, and is of a light amber color. In the proportions in which it is usually incorporated, it does not deepen the tint of the soap and is effectively masked in odor by the perfume. Neither the odor nor the color tend to increase with storage.

The velvetiness imparted by lanolin is at least as great as that produced with any other single superfatting agent, and it confers to the fullest degree all the advantages previously mentioned. Melted, it is a solvent for most perfumes, oil-soluble medicaments, etc., and may be used as a vehicle for their incorporation. One-half to one per cent is the amount usually employed, but up to 5%



Superfatting is an aid to easier milling and plodding, giving a more plastic and workable soap mass, and reducing later tendency to crack. This is especially true in "short" soaps.

may be used without detriment to the lathering properties of the soap. Such a soap will be abnormally soft when first made, but will harden on storage and become if anything tougher than an unsuperfatted soap of equal age. This percentage has been used successfully for a "skin cream" soap. In this case the odor of the lanolin will require more careful masking if it is not required to be apparent. An orange blossom compounded from petitgrain and geranyl esters as a starting point is quite suitable.

There is of course no point in using hydrated lanolin as an ingredient, especially if it is intended to incorporate at the same time perfume or other substances. Cheaper grades of lanolin are brown and have a more pronounced odor. It is also possible to obtain specially purified grades which are practically odorless, but for ordinary toilet soap purpose these are not really necessary.

Lecithin

THIS substance has emulsifying and emollient properties which relate it to lanolin. Actually it is a phosphatide, a straight chain compound differing considerably in structure from the cyclic sterols which form the active constituents of lanolin. Present in fairly large proportions in various animal structures, its presence in soap is again made plausible by its being "related to the skin." Its real value to the soap maker is its stabilizing action on the lather. Lecithin definitely reduces the bubble size and produce a pleasing creamy effect when up to 1% is used. Usually less than this proportion is effective, and its application is of especial value in shaving soaps and creams. In the brushless type of cream, it acts as a stabilizer, although its main use as an emulsifying agent or accessory is in the preparation of w/o emulsions such as margarine.

Animal lecithin from brain substance or eggyolk is obtainable commercially, but for soapmaking the mixed phosphatides forming a large proportion of the unsaponifiable matter of certain oils (chiefly soya-bean) are employed. The so-called "vegetable lecithin" offered contains up to 70% phosphatides, and is sufficiently cheap to be used with or in place of lanolin. Its odor resembles that of the original oil, and unfortunately its color is sufficiently intense to impart a yellowish tint to soaps containing it.

Wax Alcohols

THE higher fatty alcohols whose esters form the naturally occurring waxes are substances which of recent years have found a wider field of application in the soap and cosmetic industry. In cosmetic preparations, their presence confers unctuosity and homogeneity to mixtures of fats and waxes, and would appear to increase the rate at which such mixtures are absorbed into the epidermis. The penetration below this layer is in any case doubtful, except in so far as it takes place through the epithelium lining the sweat ducts.

Although these alcohols are not soluble in water, the hydroxyl group confers on them properties not found in fatty glyceryl esters, and a w/o emulsion of sorts can be formed with suitable fats and cetyl alcohol only. In soaps, their presence reduces the surface tension of solutions below that of a solution of straight soap, and acts like lecithin in producing a more stable lather.

There are four fatty alcohols at present obtainable, either in a reasonable state of purity or in admixture with one another and other homologues according to the initial composition of the oils or fats from which they are produced commercially by a hydrogenation process. These four are *myristyl*, *palmityl* (usually called cetyl alcohol as it occurs naturally as an ester in spermaceti), *stearyl* alcohol, the next highest homologue occurring naturally, and *oleyl* alcohol corresponding to oleic acid. All four in the pure state are non-rancidifying and practically odorless, but are scarcely suitable for other than fine cosmetic purposes owing to their price. It is, however, usually possible to incorporate up to 2% of cetyl alcohol in the very highest class shaving or toilet soap, and in the former its action in decreasing the surface tension and delaying drying out of the lather on the skin is very marked. As with other solid additives, it is preferably melted and mixed with the perfume before addition, and serves also as a fixative.

Many proprietary cosmetic raw materials, Corol, Satol, Ocenol, etc. whose exact composition is often by the unfortunate policy of manufacturers not disclosed, appear to consist of such alcohols. Certain of these, such as the well known Lanette Wax which in this case is stated to be a mixture of cetyl and stearyl alcohols, are cheap enough to justify inclusion in medium class toilet soaps and shaving soaps or creams. In the latter, the presence of fatty alcohols increases stability, and is thus preferable to other superfatting agents which merely soften the lather.

Saponifiable Oils

THE possibility of including suitable proportions of saponifiable oils in soap has already been discussed. The author has handled toilet soaps containing the substances which follow, and in each case it must be admitted that there is very little noticeable difference, with the exception of castor oil, which would make one particular additive more desirable than the rest except from a sales viewpoint. In passing, the phrase "superfatted with (say) turtle oil" is more suitable than merely "turtle oil soap," as it implies an overabundance of beneficial ingredient ready to be absorbed by the skin.

Most turtle oils have a fishy odor that precludes addition to a greater extent than ½%. An equal quantity of lanolin enhances the result. At this percentage the odor can be effectively masked with a bergamot-coumarin-oakmoss type of perfume. The partially hydrogenated grade is recommended, and a soap

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Bleaching Olive Foots Soaps

By Dr. Ernest Stossel

MOST olive oil foots soaps on the American market are dark green in color, and it is doubtful if there might be any greater interest in these same soaps if they were produced white or light in color. Consumers have for years become accustomed to the dark green color and demand it as a characteristic of these soaps. However, the production of light-colored olive foots soaps from dark-green or brown foots and soapstock, and the process which we used for this purpose in Spain might have other interest to soap makers and might find application in other types of soaps produced from olive foots and foots mixtures.

As is known, the oils extracted from the olive pulp with carbon bisulfide after expression of the edible oil vary in color all the way from emerald green to dark brown according to the amount of dissolved chlorophyll and oxyacids present. The oxyacids sometimes mask the genuine green color of the foots giving it a dark brown shade. This oil can be bleached readily by use of chromates or chlorates and acid in the usual way. For better grades, where a pale oil is not required but only a fairly white soap is the goal, treatment with small quantities (about .03 to .05 per cent) of benzoyl peroxide is generally sufficient to obtain the desired bleaching effect. The oil itself is not greatly reduced in color by this treatment. The green tone changes to a brownish tint when the oil is warmed with benzoyl peroxide at about 90° C. and becomes reddish when the quantity of peroxide is increased. The soaps, however, made from an oil properly treated by this method will come out white or ivory. A certain amount of practical experience with the process is necessary to determine the exact proportion of benzoyl peroxide to be used with varying lots of foots, as it sometimes happens that the soap will end up with a pale green tint if too little peroxide is used or take on a reddish color when too large an amount is used. The change in color character in the dark oil during bleaching is not so easy to recognize.

It appears that this particular oil-soluble organic peroxide is the most efficient decolorizing agent for emerald green oils. It is quite striking that we should require so much larger quantities of active oxygen.—about ten times as much as the above-mentioned proportion when chlorates and acids are used as the bleaching agent. Although by the latter process, the oil becomes quite pale, this is not the case when it is treated with benzoyl peroxide.

The acid bleaching method and the use of benzoyl peroxide are not suitable for bleaching soaps or olive foot soap stocks. These are best bleached by being treated first with hypochlorite lye and overbleached with zinc persulfate. In order to avoid waste of the bleaching lye, the soap is first grained and salted out by one or more brine changes until the lye which settles to the bottom of the kettle is quite clean. Then by a change with hypochlorite solution, it is partially bleached. It is not advisable to attempt to complete the bleaching with hypochlorite, or to use more than 0.2 per cent of active chlorine, even though this may appear to be the cheapest and most effective way. Working with large quantities of liquids, and partial decomposition of the charge cause difficulties. Another disadvantage is the difficulty with which the off-odor resulting from this treatment is eliminated. Furthermore, soaps apparently well bleached by this process, frequently darken again. But as a pre-bleaching agent, hypochlorite is very useful and cheap. This is the reason for only partially bleaching with this agent and finishing the decolorization with persulfate.

Some years ago, it was suggested to use zinc oxide simultaneously with the persulfate[1], as soaps bleached with such a mixture do not tend to darken again. The insoluble zinc oxide was suspended in cold water and added to the soap during or immediately after bleaching with the persulfate in a proportion of about 10 to 50 per cent of the latter. I found (Austrian patent) that the form of combination in which the zinc oxide is applied in this process is quite important. For best results, I used freshly precipitated zinc hydroxide. The gelatinous mass of the precipitated zinc hydroxide is more easily incorporated and distributed in the charge than a suspension of zinc oxide in water. The hydroxide is soluble in alkali (forming a zincate) and as a solution, it can be dispersed more homogeneously in the mass of soap, so that the bleaching efficiency of the persulfates is increased. Still more important seems to be the fact that the dissolved zincate, when in high dilution becomes a colloidal hydroxide, as the measurement of the changes in conductivity of solutions of zincates would indicate. Apparently we can attribute to this fact more permanent bleaching efficiency. After cutting the soap, the homogeneously distributed colloidal zinc hydroxide acts as a whitening agent and as a preventive against surface redarking.

It makes no difference, however, whether a soluble salt of zinc

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[1] Krings, *Seif. Ztg.*, 1935.

A local survey indicates that soap shampoos are now gaining in sales volume at a faster rate than the soapless products.

What Trend in SHAMPOOS?

A glimpse of the retail market and consumer preferences

By Norman Jowett

THE use of shampoos by the consuming public continues on the rise. This fact has been established quite definitely. But what of the trend in the various types of shampoos, i.e. soap liquids, soapless liquids, jellies, soap powders, soapless powders, and so on? After a look into the retail sale of shampoos in small packages over the past few weeks, the impression was gathered that liquid soap shampoos, after being threatened in popularity and loss of ground to other types over the past several years, are now holding their own and picking up lost ground. The impression was also gathered that liquid soapless shampoos, after a steady upward trend during the past few years, have reached a peak, leveled off, and of late have been moving downward. The sales of jelly shampoos, and soap and soapless powders were still found to be negligible, just as they were a year or two ago.

Not only was a definite impression regarding the general sales trends secured, but several other significant sales facts were confirmed. As in any retail product, the most widely advertised shampoos are the largest sellers. Shampoos were found to be no exception to the well-known rule that consumer preference is in direct proportion to the extent of advertising. Although shampoos sell all year around, they are distinctly seasonal items in the matter of volume, as probably every shampoo manufacturer knows. Still another general fact unearthed, and one not so generally recognized, is that the retailer has little chance to recommend any type or brand of shampoo.

To study one angle of the market, a number of drugstores and several of the larger department stores in the New York metropolitan area were recently canvassed by a representative of *Soap*. In the department stores, contact was made with the buying department and the toilet goods counter itself. The purchasing department supplied information as to the general trend in the sale of shampoos in that particular store, while the sales people at the toilet goods counter provided information as to consumer habits and reactions, including complaints received, frequency of purchases by the same parties, and so forth. In the drugstore, contact was made with the druggist himself, who was able to give quite an accurate picture of consumer preferences in types of shampoos during the past few years.

One statement was unanimous among all those interviewed, i.e., that the use of shampoos by the public has been marked by a steady upward trend. This fact is confirmed by a survey conducted each year by a well-known newspaper in one of our mid-western cities as to consumer use and preference of a variety of household products. According to this survey, 39.7 per cent of all families in that city used shampoo in 1936. In 1937, this figure had increased to 47.8 per cent, and in 1938, to 49.1 per cent. It seems safe to estimate that the percentage of shampoo users in this typical American city will pass the half-way mark before the year is out. Not only did more families use shampoo during this period, but each family used a larger amount, for in 1936, the average family consumed 4.7 bottles annually while in 1938 it had jumped to 5.3 bottles, an increase of approximately 12 per cent.

As to the type shampoo of which most is sold, two-thirds of the druggists interviewed said that liquid soap shampoo sells best. Twenty-one, out of thirty druggists visited, definitely stated that this type shampoo still holds the greatest consumer preference, although closely challenged by the soapless liquid type. The nine remaining druggists reported that the latter type was the best seller.

The liquid soap shampoo, in aggregate, has always, at least during the past twenty years, sold in the greatest volume. However, the leading brand during the past few years has been of the soapless type. This brand enjoyed its greatest popularity about one year ago. Since then, its consumer preference has leveled off, and even dropped to some extent. In January, 1937, according to the survey mentioned above, the leading brand of shampoo, a soapless type, enjoyed a consumer popularity of 28.8 per cent. The following year it leaped to a consumer perference of 48.7, but in January of this year

its popularity had decreased to 42.5 per cent. As the most advertised brand, its popularity was to be expected, but as one druggist pointed out, the widespread advertising not only furthered that particular brand, but made the public shampoo conscious and enhanced all other brands regardless of type.

With the advance in popularity of the soapless liquid shampoos, there was a corresponding drop in the popularity of the liquid soap products. In January, 1937, the second and third most popular brands, both soaps, had a consumer popularity of 17.3 and 11.4 per cent respectively. In January, 1938, when the soapless brand moved upward, the other two brands moved downward to a consumer preference of 15.6 and 8.3 per cent. But with the leading soapless brand moving downward in January of this year, the soap shampoos again moved upward, enjoying a popularity of 17.4 and 10.4 per cent.

The average drugstore, of those visited, stocked about sixteen different brands of shampoo. The largest number carried by any one drugstore was twenty-four, and the least, eleven. Of the average sixteen brands on sale in each store, fully three-fourths were of the liquid soap type. The remainder, of course, being almost wholly soapless liquids. Jelly and powder shampoos were virtually unheard of. Only half of the thirty stores carried any powdered shampoo, but in no case did any store have over two brands of this type. Consensus of opinion seemed to be that the powdered shampoo had reached its peak of popularity some years ago, and has since decreased to an occasional call.

Four of the five department stores visited sold a greater amount of liquid soap shampoo than they did of the soapless type. The buyer for one store that was the exception said that sales of X Brand, a soapless liquid, outnumbered the sales of all other shampoos put together. Asked to what he contributed this consumer preference, he stated "advertising." When told that sales of this particular soapless brand had fallen off in other stores, he admitted that they had also fallen off in his store, but not enough to lose this brand's top-notch position.

In the department stores, it was impossible to obtain any information as to repeat sales, etc. The druggist, however, has closer personal contact with purchasers, and, in many instances, is able to remember certain characteristics of the customer. The average druggist when asked how often customers bought shampoo, at first replied he could not keep tract of all his sales and that the customers varied anyway. Upon further questioning, however, he would remember that Mrs. Jones bought one bottle of X brand every month. From the information gathered, it seemed that the average person purchased one large bottle every two months, while the small or ten cent size carried repeat orders every two weeks.

This brings up an interesting fact. The ten cent size bottle of shampoo, when carried, invariably sells better than any other size. Twenty-three of the druggists sell this small item, and reported it as such. The sales trend seems to be toward this smaller unit. Does this mean that all manufacturers of shampoo must come to this smaller size, if they have not already done so? Is it mostly a matter of ten-cent chain store competition?

It is a question in the druggist's mind why the consumer prefers the ten-cent size. In many instances, the druggist believed that the customer wanted to experiment and see what type shampoo was best suited for his or her particular type hair, and it was cheaper to experiment with the smaller bottle. Then again, many people use shampoo infrequently, and therefore find the smaller bottle more suitable. The real reason probably lies in the psychological fact that the average person would rather pay only ten cents at a time as against fifty cents, regardless of the actual amount of shampoo obtained for the money. Because of the public's apparent preference to purchase in smaller units, the 10 cent store has been given the opportunity definitely to stamp itself as a serious competitor of the corner drugstore.

The department stores, as a rule, do not sell shampoos in the small bottles, but where they do sell, their popularity is evident. In the regular, or large size bottle, the retailer, both drugstore and department store, found that shampoo must be priced below fifty cents in order to command attention. Above this figure, the public interest is absent. The popularity of two of the best sellers was attributed by some druggists to combination packages. By coincidence, both were soapless liquid shampoos. One sold in combination with a small bottle of hand lotion, and the other with a smaller bottle of the same shampoo. If the customer bought a large bottle, the smaller one was given free. The first combination is no doubt being offered in order to offset decreasing sales, while the second is one of the newer brands and serves as a method of introduction to the public.

The druggists were asked during which season shampoos, like many other products, sold best. All answered in the affirmative, as expected, naming the summer as the best selling season, many stating that they carried shampoo window displays during the hot weather. Four of the five department store buyers contacted agreed with the druggists, while the remaining one stated that sales of shampoos in his' store were fairly even throughout the year. If the retailer reports more sales at home when a good many of the people are away, then that is, without doubt, the best season of the year. For in addition to sales at home, there would be those made to people on vacation away from the city.

The one department store executive who said that his sales were just as good during the winter season, thought that it might be due to the fact that many people finding themselves idle on long winter evenings, shampoo their hair for the

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WHAT SOAP ON FARMS?

WHAT types of soaps are bought by farmers' wives, —what types and brands do they prefer? A small survey of the market among the farm population of Michigan made recently by the *Michigan Farmer*, a farm publication, reveals some interesting facts on the purchase of soaps, and also cleansers, disinfectants, and the like, which may or may not be typical of the inhabitants of other states.

The information was secured from questionnaires sent out to some 2,000 Michigan farm homes, 17.6 per cent replying to the questions. Do you prefer bar or flake laundry soap? In response to this first question, 137 replies named bar soap, 116 names flakes, and 91 stated both. Two replied that they made their own soap. What brand of bar soap do you prefer? Fels Naptha was first with 130, P & G second with 83, Ivory third with 69, and American Family fourth with 15. The balance named 18 other brands.

Of those who stated a preference in flake soap, 79 specified Oxydol, 64 named Rinso, 41 gave Chipso, 34 named Ivory, 24 Lux, 19 Super Suds, and 12 Easy Task. Altogether 29 different brands of flake soap were name in the answers.

On the question of bath soap, Lifebuoy led the parade with 106, Ivory was second with 85, Lux third with 79, Palmolive fourth with 64, Camay fifth with 37, Sweetheart sixth with 13, and Lava seventh with 9. Altogether 24 brands of toilet soap were named in the responses.

Do you use a scouring powder? In answer to this question, 335 stated yes and 10 answered no. In breaking down the preference by brands, 22 products were named. These were led by Old Dutch Cleanser with 177, Sunbright with 56, Bon Ami 42, Kitchen Cleaner 23, Bab-O 20, Gold Dust 17, Lighthouse 12. There is a question if the readers really understood what a scouring powder is. Gold Dust is a soap powder. One named Sani-Flush as a scouring powder.

Do you use lye? This question brought 176 yes and 135 no, and others stating very little or no answer. Red Seal was named first with 58, Babbitts' second with 21, and the balance spread out over 26 brands. An interesting angle is the uses for which lye is bought on the farm. First at 57 was to clean sinks and drains, second at 37 was for *soap making at home*. Also were mentioned uses for toilets, scrubbing, bleaching, disinfecting, killing rats, butchering, removing paint and varnish, plus 30 others.

The majority of replies which stated that they used disinfectants was large. Some 282 said that they used a disinfectant, and 39 said they did not. Of these, Lysol was first with 152, Roman Cleanser second with 50, Clorax third with 17. It appears that all disinfectants, germicides, and antiseptics were classed together irrespective of composition or uses. Ammonia, carbolic acid, washing soda, chloride of lime, iodine, formaldehyde, Listerine, Lavoris, boric acid, sodium hypochlorite, and the like were all classed as disinfectants by those who answered. Altogether 52 brands of "disinfectant" were named.

In analyzing soap consumption by volume, it was found that the average for laundry soap was 5.8 bars per family per month. Flake was 2.6 boxes per month. Toilet soap was 4.6 bars per month. Of all these purchases, 158 answers stated that they bought in independent stores, 142 gave chain stores, and 51 stated both.

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The employment index for the soap industry during June, 1939, advanced to 89.8, a 2.1 advance over the mark for the previous month and 4.8 points above the June, 1938 mark. The soap payroll index also moved up to give a 1939 June figure of 93.7. This compared with the 1939 May mark of 90.3 and the June, 1938 payroll index of 85.9.

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Support of resolutions introduced into Congress, extending to 1944 the date to which American fishing companies may utilize foreign killer ships without being obliged to pay an excessive excise tax, was urged by George Lord, representing American whalers and John B. Gordon, secretary, Bureau of Raw Materials, American Vegetable Oils and Fats Industry, at a recent luncheon held at the India House, New York. The revised Revenue Act of 1938 had set June 30, 1939, as the deadline for the use of foreign killer ships, without paying an excise tax. The speakers pointed out, that if the proposed resolutions are not passed, the American whaling industry goes out of existence as a result of the prohibitive excise tax. Whale oil consumption in the United States in 1938 totaled 70,664,000 lbs. of which 66,080,000 lbs. went into soap.

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Entries are now being made for the 1939 All-America Package Competition, which last year reached an all-time high of 23,000 entries. Entry in the competition is open to all package-using firms, designers, package suppliers, machinery manufacturers, etc., who may submit any package, display or package machine installation placed on the market during 1939. There is no entry fee, and any number of packages, displays, etc., may be submitted. The contest closes December 30, 1939. Entries must be accompanied by an entry blank, which may be obtained from *Modern Packaging*, sponsors of the contest, 122 E. 42nd Street, New York.

WETTING POWER

A study of inorganic salts as adjuvants for increasing wetting power

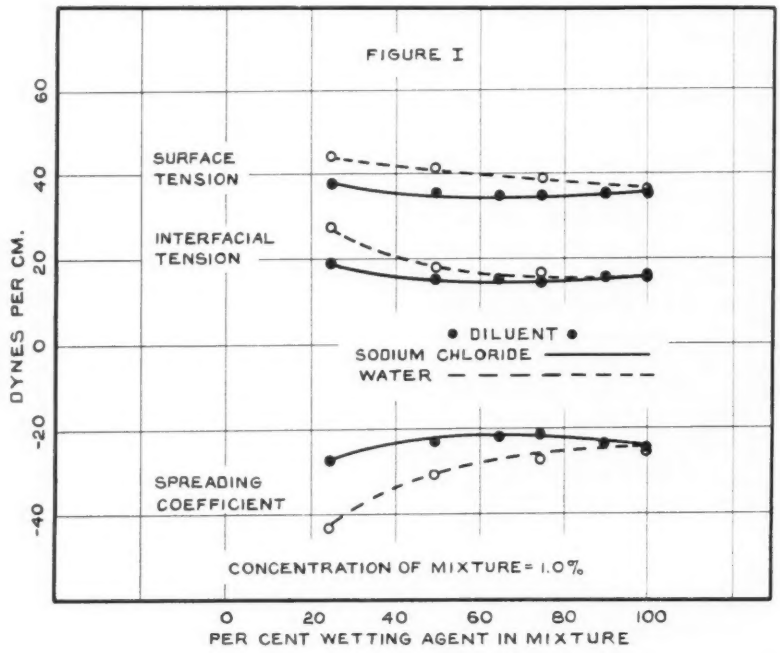
By H. L. Cupples

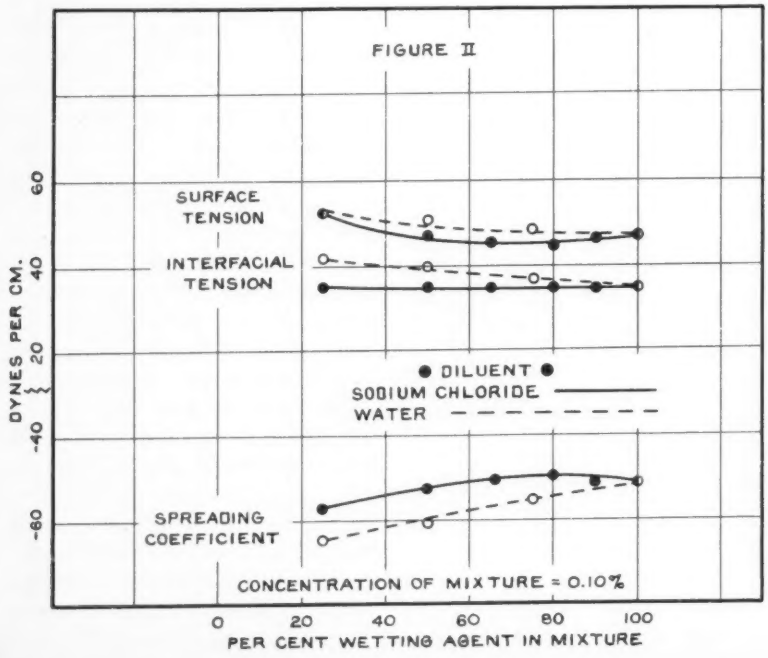
Bureau of Ent. & Plant Quarantine, U.S.D.A.

AN IMPORTANT advantage of the modern sulfated and sulfonated synthetic detergents over soap is that their solutions are usually not adversely affected by the presence of soluble calcium and magnesium salts. This advantage may be due in some cases to the greater solubility of these salts, and in other cases to the fact that, though relatively insoluble, they are retained in suspension in finely divided form.

As an example of the indifference of some of these newer synthetic materials to the presence of calcium and magnesium, 4 per cent solutions of a selected proprietary wetting agent[1], a sulfonated ester of a dicarboxylic acid, showed no precipitation upon the addition of 2 grams per 100 cc. of calcium chloride or magnesium chloride, and 1 per cent solutions of the wetting agent showed no precipitation upon the addition of 0.5 gram per 100 cc. of either of these chlorides.

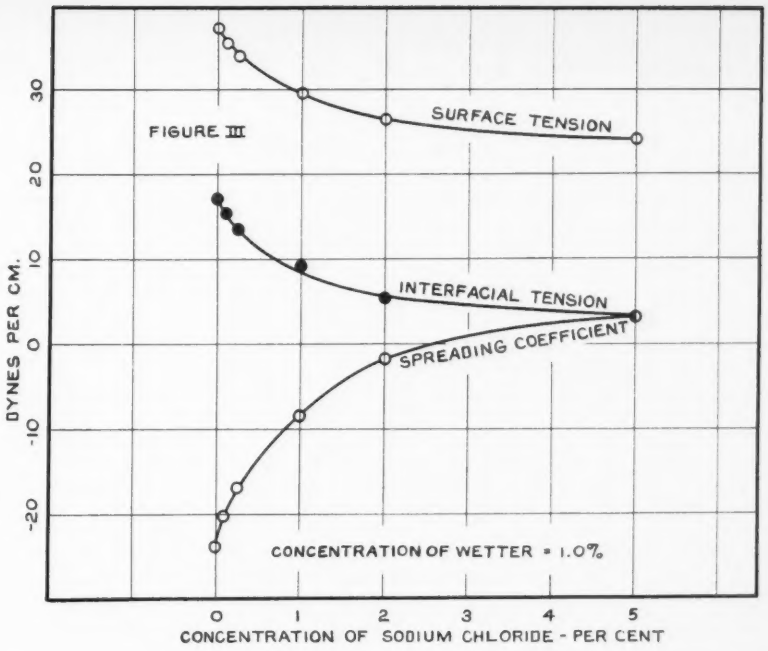
[1]Alphasol AY, manufactured by the American Cyanamid & Chemical Corp. Concentrations are here stated of the material as received.





Although these solubility experiments indicated that this wetting agent would not be precipitated in the presence of high concentrations of calcium or magnesium salts, short of actual "salting out" of the wetting agent, it did not necessarily follow that the wetting properties of the solutions were unchanged. Preliminary experiments along this line showed that substantial increases in wetting power might result from the addition of calcium or magnesium salts. For example, the addition of 0.5 gram of calcium chloride per 100 cc. to a 1 per cent solution of wetting agent increased the spreading co-

efficient on mineral oil (1) from —24.4 dynes per cm. to —3.5 dynes per cm. The same concentration of magnesium chloride increased the spreading coefficient to —5.9 dynes per cm. A solution containing 0.67 per cent of wetting agent plus 0.33 per cent of magnesium chloride was found to have a spreading coefficient of —12.2 dynes per cm. Thus, at 1 per cent total concentration, a mixture of 2 parts wetting agent with 1 part magnesium chloride yielded a solution having higher wetting power than a 1 per cent solution of wetting agent only. From these experiments it appeared that the "salt effect" might be of considerable practical importance with such solutions, and further investigation was undertaken.



In the first series of experiments the total solute concentration was constant at 1.0 per cent by weight, and the composition of the solute was varied by diluting the wetting agent with different proportions of sodium chloride or water. The results, which are presented in table I and figure I, indicate that dilution with sodium chloride gives lower surface tensions and interfacial tensions than a corresponding dilution with water, and that even a substantial dilution with sodium chloride may enhance the wetting power over that of the undiluted material.

TABLE I—Variation in wetting properties with composition of solute, at total concentrations of 1.0 and 0.10 per cent by weight.

Composition of solute, per cent by weight			*Surface Tension, Dynes per cm.*	*Interfacial Tension, Dynes per cm.*	*Spreading Coefficient, Dynes per cm.*
Wetting Agent	*Sodium Chloride*	*Water*			
Total solute concentration 1.00 per cent by weight.					
0	100	—	67.5	44.5	—81.5
25	75	—	38.2	19.6	—27.3
50	50	—	36.2	16.4	—22.1
65	35	—	35.7	16.1	—21.3
75	25	—	35.6	15.4	—20.5
90	10	—	36.3	16.6	—22.4
100	0	—	37.2	17.1	—23.8
25	—	75	45.1	28.1	—42.7
50	—	50	42.0	18.7	—30.2
75	—	25	39.8	17.3	—26.6
100	—	0	37.2	17.1	—23.8
Total solute concentration 0.10 per cent by weight.					
25	75	—	52.7	35.2	—57.4
50	50	—	47.6	35.1	—52.2
65	35	—	45.9	34.8	—50.2
80	20	—	45.0	34.8	—49.3
90	10	—	46.4	34.8	—50.7
100	0	—	47.2	34.8	—51.5
25	—	75	52.8	42.1	—64.4
50	—	50	51.1	39.9	—60.5
75	—	25	48.6	36.9	—55.0
100	—	0	47.2	34.8	—51.5

TABLE II—Variation in wetting properties with concentration of sodium chloride, at a constant concentration of wetting agent, 1.00 per cent by weight.

Concentration of Sodium Chloride, per cent by weight	*Surface Tension, Dynes per cm.*	*Interfacial Tension, Dynes per cm.*	*Spreading coefficient, Dynes per cm.*
0.00	37.2	17.1	—23.8
0.10	35.2	15.5	—20.2
0.25	33.8	13.6	—16.9
1.00	29.8	9.2	— 8.5
2.00	26.7	5.5	— 1.7
5.00	24.1	3.3	+ 3.1

The results of similar experiments at a constant total solute concentration of 0.10 per cent by weight are presented in table I and figure II. As at the higher concentration, the presence of sodium chloride tends to lower the surface tension and the interfacial tension, and thus increase the spreading coefficient. Dilution of the wetting agent with sodium chloride, up to about 20 per cent by weight of sodium chloride, seems to improve slightly the wetting power of the solutions when used at this solvent concentration.

In another series of experiments increasing amounts of sodium chloride were added to solutions containing the same concentration of wetting agent (1.00 per cent by weight). From the results given in table II and figure III a large increase in wetting power may be produced in this manner. Beginning with a solution of wetting agent containing no added salt, which has a spreading coefficient of —23.8 dynes per cm., increasing amounts of sodi-

(*Turn to Page* 41)

New Products and

Soap and brush are packed as a unit in a new combination package just introduced by Pro-phy-lac-tic Brush Co., Florence, Mass. The tube for the complexion soap is by Sheffield Co., New London, Conn., and the box by Hampshire Paper Box Co., Florence, Mass.

"Anco" glass cleaner is a new product of Anderson Co., Gary, Ind. Packed with the container is an applicator pad which has a coarse side for removing insects and hardened dirt. Container by Continental Can Co., N. Y.

"Rodite" a prepared rat bait in the form of a cracker has just been placed on the market by West Disinfecting Co., L. I. City, New York. It is packaged in an attractive lithographed paper container.

Packages

Jean Nate's, New York, is now marketing its bath lotion "Friction pour le Bain" in a new hexagonal package of chartreuse, black and white, which harmonizes well with the frosted bottle. Design by Robert Gair Co. of New York.

"Enduro" polish and cleaner, a product of Midwest Manufacturing Co., Detroit, is newly packed in a lithographed can. Container was designed by American Can.

Included in the newly redesigned line of soaps by Shulton, Inc., New York, is the "Button Box," — a reproduction of the household chest of the 18th Century. Different sized drawers hold cakes of toilet, bath and guest soap.

News....

Prison Soap Plant for N. Y.

Construction of a new prison soap plant in New York, to replace the old unit at Welfare Island is contemplated by the Department of Correction, SOAP is advised. The new plant will be located on Riker's Island and will have a capacity of 500,000 to 1,000,000 lbs. of soap a year. Details of construction and machinery installation are being investigated by Mr. Bruderer, superintendent of laundries of the Department of Correction. All soap produced will be used by city institutions.

Set Quotas on Philippine Oil

Export quotas on Philippine coconut oil have been substituted for the previously planned export taxes in a bill signed by President Roosevelt following the close of the recent Congressional session. Pending granting of complete independence, it had been proposed to tax imports of oil from the Philippines at the rate of 5 per cent of the American duty in 1941, increasing the rate 5 per cent each year to a maximum of 25 per cent in 1945. An amendment to the Tydings-McDuffie Act substitutes export quotas which will decline 5 per cent each year from 1941 to 1946, when independence is to be granted.

New Soap Company

The Pacific Soap Co. has recently been formed in Vancouver by F. D. Collins and W. F. Watson, with offices at 129 West 10th Ave.

Philip Feldman Dies

Philip Feldman, founder and president, Mt. Hood Soap Co., manufacturer of "Borene" soap granules, Portland, Ore., died August 12th, in that city. Mr. Feldman, who was in his seventy-fifth year, was born in Germany and came to this country at the age of sixteen. He founded the Mt. Hood company in 1905, and remained active in its management

Philip Feldman

until his retirement in 1934. Mr. and Mrs. Feldman celebrated their fiftieth wedding anniversary two years ago. He is survived by his wife, three sons and a daughter.

Advertise Hershey Soap

Hershey Estates, Hershey, Pa., recently launched a sectional newspaper advertising campaign to promote the sale of "Hershey's" cocoa butter soap, a comparatively new product. The campaign, being conducted in one New Jersey and five Pennsylvania newspapers is a departure from the usual policy of the Hershey Co., which in the past, has avoided such advertising. The drive will be expanded when production and distribution facilities are extended in other territories.

New Xmas Line For Colgate

Colgate-Palmolive-Peet Co., Jersey City, is offering a new line of both men's and women's gift boxes for the coming Christmas season. The items are packaged in bright Christmas colors, featuring silhouetted figures in colonial costumes.

Procter & Gamble Earnings Up

Procter & Gamble Co., Ivorydale, Ohio, reported a net profit of $25,399,792, for the year ended June 30, 1939, equal, after depreciation, federal income taxes, etc., and dividend requirements on preferred stocks, to $3.86 a share on 6,409,418 no-par shares of common stock. This compared with a net profit of $17,439,194 for the year ended June 30, 1938, equal to $2.59 a common share. For the quarter ended June 30, 1939, net profit amounted to $6,930,753 or $1.04 a common share, comparing with $5,254,048 or 79 cents a common share for the June quarter of 1938. Current assets as of June 30, 1939, amounted to $89,528,717, and current liabilities were $17,860,356, compared with current assets of $85,333,818 and liabilities of $13,310,346 at the end of the preceding year.

Glenn H. Pickard Dies

Glenn H. Pickard, well-known authority on oils, fats, and related products, died recently at his home in Wilmette, Ill. Since 1916, he had conducted his own business in Chicago, as a consulting chemist and chemical engineer. Prior to that, Mr. Pickard had filled various positions as chemist and superintendent of refineries for Spencer-Kellogg & Sons, Inc., Buffalo; chemist and superintendent for George D. Wetherill & Co., Philadelphia, and manager of the South Chicago plant of the American Linseed Co., Chicago. He was 59 years of age.

New Gunk Compound

Curran Corp., Malden, Mass., has developed a new product,—"Gunk Compound P-10W." It is said to be a colloidal solvent of exceptionally high performance which will remove Bunker "C" and other tarry fuel oil stains from tank trucks.

C.I.O. Wins Armour Vote

Employees of the Armour & Co. soap plant, at 31st Street and Racine Avenue., Chicago, recently voted in favor of a proposal to permit the Packinghouse Workers Organizing Committee, an affiliate of the C.I.O., to act as their bargaining agent. The election, ordered by the National Labor Relations Board in Washington, was the result of a demand by the C.I.O. for a certificate of representation in the plant from the NLRB in an effort to obtain a national collective bargaining agreement with the Armour company. The Labor Board has certified the P.W.O.C. as exclusive bargaining agent for the workers in the main plant and will do the same in the soap plant as a result of the recent election. Armour has maintained that it cannot recognize the P.W.O.C. as a national bargaining agent unless the Labor Board so rules.

Bulgaria Rose Oil Crop Up

Production of rose oil in Bulgaria reached record proportions in the season just ended, according to a report from the Vice Consul at Sofia. Total production during 1939 amounted to 7,920 pounds compared with 3,718 pounds in 1938 and 6,270 pounds in 1937. Exports of rose oil from Bulgaria in 1938 amounted to 4,145 pounds, valued at $679,000 compared with 4,794 pounds valued at $644,700 in the preceding year. The United States accounted for a large portion of these exports.

Coast Branch for Kerk Guild

Kerk Guild Inc., soaps, New York, has announced the opening of a branch office in the Knickerbocker Building, 643 S. Olive Street, Los Angeles. The office is in charge of Malcolm C. Currie.

Reddish Joins Hardesty Co.

Warren T. Reddish has joined the W. C. Hardesty Co., New York, as vice president in charge of manufacture, developments and specialty sales. He was formerly president of the Twitchell Process Co. prior to its merger with Emery Industries, Inc., and later vice president of the consolidated companies. The Hardesty company, which manufactures stearic

Warren T. Reddish

acid, red oil and glycerine, has plants in Dover, Ohio, Los Angeles, and Toronto. Mr. Reddish will make his headquarters at the Dover plant.

Columbia Alkali Moves Office

Columbia Alkali Corp., division of the Pittsburgh Plate Glass Corp., Barberton, O., has moved its main sales offices from Barberton, to its former location at 30 Rockefeller Plaza, New York. W. I. Galliher, director of sales, and J. P. Leppart, assistant director, will return to their former headquarters in New York as a result of this decision.

P & G Advertising Campaign

Procter & Gamble Co., Ivorydale, O., recently sponsored a special sale of "American Family" soap in Chicago and nearby suburbs. Shoppers who bought five bars of the soap at regular price were offered a ten cent tube of Pond's Cold Cream for an additional one cent.

New Fritzsche Chicago Mgr.

Fritzsche Bros., Inc., New York, have announced the appointment of Joseph A. Gauer as manager of the Chicago office and territory. He is well known in the territory over which he will have supervision, having worked out of the Chicago office since joining the firm in 1925. Mr. Gauer fills the position left vacant by the death of M. B. Zimmer.

Dispenser Specifications

A new specification for soap dispensers (FF-D-396a) has recently been issued by the United States Government, and supersedes that of October 12, 1935 (FF-D-396). The only changes of note are those in soap discharge requirements. The old specification stated that "the dispenser shall require not less than 1,000 nor more than 2,000 positive actions to remove 12 fluid ounces of liquid soap and not less than 500 nor more than 1,000 positive actions to remove 12 fluid ounces of powdered soap." All this, regardless of the type of dispenser. The new specification, however, gives requirements for each type of dispenser. For rigid dispensers discharging liquid soap, no less than 1,00 nor more than 2,000 positive actions to remove 12 fluid ounces is the requirement. For tilting dispensers carrying liquid soap, no less than 350 nor more than 700 positive actions. For the rigid type dispensing powdered soap, no less than 500 nor more than 1,500 positive actions is specified, and for tilting dispensers discharging powdered soap, no less than 300 nor more than 900 positive actions to remove 12 fluid ounces.

Second U.S.P. XI Supplement

The *Second U.S.P. XI Supplement* has just been released by the committee of revision of the U. S. Pharmacopoeia. The new supplement includes many new monographs as well as a revision of 85 of the monographs of the original U. S. P. XI. The revised monograph for hard soap (Sapo Durus) changing the acid value, states that the acid value must not be below 185 nor above 205, using about 1 Gm. of the combined fatty acids, accurately weighed. The price of this supplement is $1.50.

Westvaco Acquires Magnesol

Westvaco Chlorine Products Corp., New York, recently acquired control of the Magnesol Co., So. Charleston, W. Va., which manufactures a line of products used for purifying oils and solvents. Maurice E. Gilbert heads the new corporation.

Eavenson Strike Ends

Employees of J. Eavenson & Sons Co., Camden, N. J., recently returned to work, ending a sixteen-week strike. The strikers, members of the United Soap Workers Local Industrial Union, No. 931, although going back to work, refused to drop pending charges against the company before the National Labor Relations Board. The charges brought by the union state that the company refused to bargain in good faith, coerced its employees in violation of the Wagner Act, and discriminated against members of the union.

Cowles Names Agents

Cowles Detergent Co., industrial alkalies and soaps, Cleveland, has appointed Newton P. Armstrong as representative in New England with headquarters in Boston. Frederick H. Hitchcock has been named a representative for the company in Michigan, with headquarters in Detroit, while E. W. Hutchinson, who has been representing Cowles in the Detroit area for a number of years, continues in that capacity.

Scholler Expands Plant

Scholler Bros., textile soaps, Philadelphia, are constructing a two-story laboratory building of brick and glass construction, which when completed, will add 20,000 sq. ft. of work space to their plant.

Colgate Wants Taxes Back

Colgate - Palmolive - Peet Co., Jersey City, recently filed suit in the Federal District Court in Wilmington, Del., to recover from the Bureau of Internal Revenue $885,874 in processing taxes paid in 1935. The company states that the taxes were collected erroneously and illegally.

Register Soap Slogan

Manhattan Soap Sales Corp., New York, recently registered the slogan "Use the Sweetheart Soap Skin Diet," with the *Printers' Ink* Clearing House of Registered Phrases.

Shulton Window Displays

Shulton, Inc., New York, recently awarded 800 dollars in prizes to the winners of a contest featuring window displays of the company's "Old Spice" line of soaps and toiletries. The contest was divided into two classes: Class A, department stores, in which The Emporium, San Francisco, was awarded first prize of 250 dollars; Chandler & Co., Boston, 100 dollars for second prize, and Crowley, Milner & Co., Detroit, 50 dollars for third prize. In Class B, for smaller stores, W. B. Stevens Pharmacy, Oconomowoc, Wis., won first prize; while the Wallace Drug Co., Endicott, N. Y., and the Red Cross Drug Co., Santa Barbara, Calif., took second and third prizes respectively. The Stevens prize-winning display is shown below.

Opposes Prison Soap Plant

Representative John W. Caffey, a member of the North Carolina state board of awards, recently stated that he is opposed to an appropriation of $43,000 for equipment for the prison manufacture of soap. The manufacture of soap, he said, is a highly technical process, and the manufacturing cost would be far in excess of the cost of an even better product which could be purchased on the open market.

Soap Sales Above Average

While sales of soaps during the second quarter of this year were slightly below those of the first quarter in 1939 and the second quarter of 1938, they were 5.6 per cent above the average quarterly sales for the four years 1935 to 1938 inclusive, according to figures released by the Association of American Soap and Glycerine Producers in its soap census tabulations. Sales for the second quarter of 1939 amounted to 649,089,313 lbs., valued at $64,125,997, as against 698,183,653 lbs. valued at $67,858,483 for the first quarter of 1939, and 653,708,146 lbs., valued at $63,744,769 in the second quarter of 1938.

D & R 50th Anniversary

Daggett & Ramsdell, soaps and cosmetics, New York, are repackaging their entire line in celebration of their Fiftieth Anniversary next year. The new packages, designed by Everett W. King, New York package designer and restyled in the spirit of the period of the firm's birth, 1890, were on display August 11, in the Daggett & Ramsdell Salon at Rockefeller Plaza, New York.

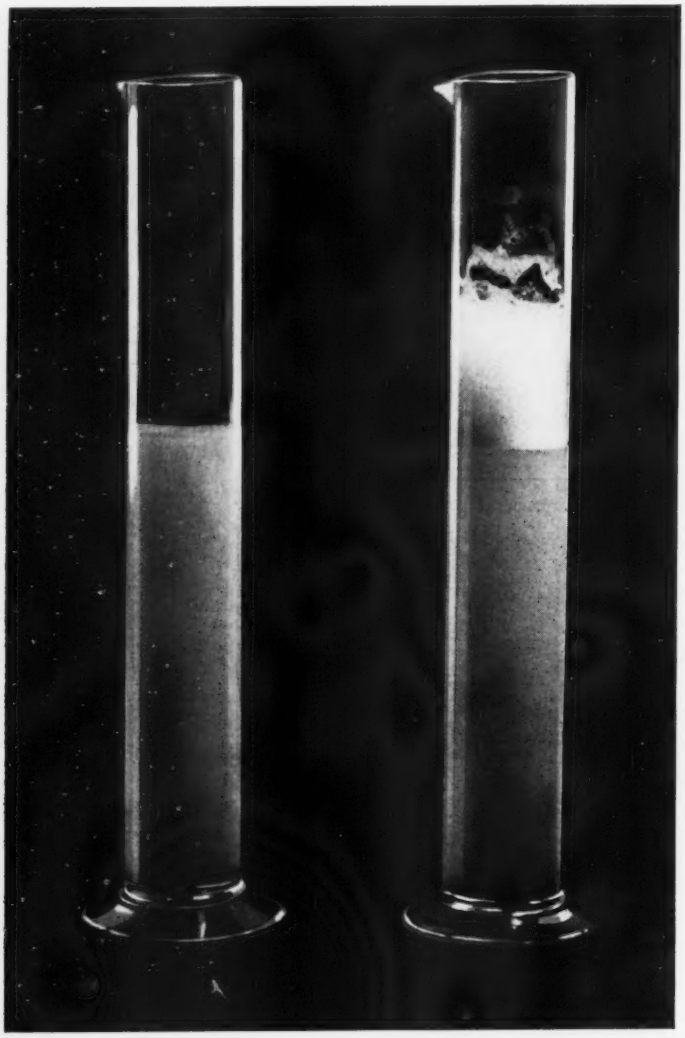
Soap Standards Group to Meet

The advisory committee of Committee D-12, engaged in formulating a set of specifications for soaps and detergents, has decided to hold its Fall meeting at the Hotel New Yorker, New York, on Monday, Oct. 30 and Tuesday, Oct. 31, 1939. Schedules of the sub-committee and section meetings will be released later.

More Suds FROM Less Soap

WHEN SOAP IS PROTECTED FROM HARD WATER SALTS BY ACTION OF

TETRA SODIUM PYROPHOSPHATE



AMONG the many outstanding characteristics of Victor Tetra Sodium Pyrophosphate is its ability to increase the sudsing power of soap. By actual test one ounce of anhydrous TSPP is capable of releasing 2.3 ounces of soap (calculated as sodium stearate) from combination as insoluble soap. The soap thus freed produces essential sudsing action.

The two cylinders here pictured contain water of 150 parts per million hardness and 2/10% of a commercial type soap powder. Composition of the soap powders used are as follows:

	Left Cylinder	Right Cylinder
Soap	66.5%	62.2%
Anhydrous Sodium Silicate	7.3	3.3
Soda Ash	4.4	4.4
Anhydrous TSPP	...	10.5
Moisture	21.8	19.6

Although the left hand cylinder contains more anhydrous soap, there are no suds because all of the soap has been consumed in softening the water. The cylinder on the right, containing less soap than its companion, has copious suds. The pyro present has liberated the soap from combination with magnesia, thereby making it available for sudsing and detergent purposes.

Anticipating the demand for tetra sodium pyrophosphate as a soap builder, Victor developed an improved manufacturing technique . . . built the largest plant of its kind in existence today . . . was first to meet the demand for a product of uniformly high quality.

VICTOR CHEMICAL WORKS

141 W. JACKSON BOULEVARD CHICAGO, ILLINOIS

New York, N. Y.; Kansas City, Mo.; St. Louis, Mo.; Greensboro, N. C.

Plants: Nashville, Tenn.; Mt. Pleasant, Tenn.; Chicago Heights, Ill.

VICTOR

HEADQUARTERS FOR . . .

pHosphates

Soap Firm War Relic

An interesting relic of the World War carrying the name of a well-known American soap manufacturer, Manhattan Soap Co., recently came to light in the printing plant where *Soap & Sanitary Chemicals* is produced. It so happened that some twenty-odd years ago, Leo Thomas Weiss, today foreman for the Barnes Printing Co. who have printed *Soap* for a number of years, was a sergeant in the 18th Machine Gun Battalion of the Sixth Division, A.E.F. Traveling from one battle front to another, (they were called the "Sight-Seeing Sixth") he arrived at the Meuse-Argonne just in time for the big 1918 push. During his travels in France, under fire and out, through the delousing camp and home, this can of "Foot Powder" accompanied him. Only recently, Mr. Weiss states, he unearthed it from among his war relics and used some of its contents to ease his feet during a 12-hour tour of the World's Fair.

Oil Chemists to Meet

The American Oil Chemists' Society will hold its annual Fall Convention at The Stevens Hotel, Chicago, on Oct. 4, 5, and 6. The program will be divided into three major sections—one devoted to general papers on oils and fats, another devoted to a symposium on the industrial applications of fats and fatty acids, and a third group of papers will be presented on soaps. Entertainment features will consist of a smoker on the evening of Oct. 4, a banquet and floor show on Oct. 5, and a choice of industrial trips on Oct. 6. J. P. Harris, Industrial Chemical Sales Co., Chicago, is general arrangements chairman and Dr. R. C. Newton, Swift & Co., Chicago, is in charge of the technical program.

P & G Workers Share Earnings

Employees of Procter & Gamble Co., in plants and offices throughout the country received $449,000 last month in the company's semi-annual distribution of profit sharing dividends. The plan is based on ownership of P. & G. common stock.

Colgate Earnings Up

Colgate - Palmolive - Peet Co., Jersey City, reported a net profit of $2,427,093 for the first six months of 1939. This was equal to 88 cents per common share after deductions, and compares with a net profit of $1,646,421, equal to 47 cents a share for the corresponding period in 1938. Total domestic and foreign sales for the first six months of this year totaled $50,513,605, as compared to $49,864,258 during the same months of 1938.

John F. Hinckley Dies

John F. Hinckley, retired chemical engineer and for many years associated with Lightfoot Schultz Co., soap manufacturers, Hoboken, N. J., died last month at his home in Queens Village, Queens, New York. He was seventy-one years old, a native of Marlboro, Mass. A graduate of Massachusetts Institute of Technology, he was also a former member of the American Chemical Society, the Chemists' Club of New York and the Brooklyn Engineers' Club. Surviving is his wife, and a son, Professor Dexter Hinckley, assistant to the dean of the engineering department at Columbia University.

P & G Sales Mgr. Buys Farm

Thomas J. Wood, general sales manager of Procter & Gamble, Cincinnati, has purchased a 189-acre farm at Loveland, Ohio.

Manhattan Files on Coast

Manhattan Soap Sales Corp., New York City, has been recorded in Los Angeles county, California, with a capital stock of $10,000. The California agent is Arthur P. Harris, 1801 West Seventh St., Los Angeles.

Collects Slot Machines

Alden S. Boyer, president, Boyer International Laboratories, soaps, Chicago, has been devoting his leisure time to the collection of old "coin slot machines." The "Chicago Coin Device Museum," as Mr. Boyer calls it, is housed in a corner of the Boyer factory.

Reports Trouble Shooting

In line with the recent article on "Trouble Shooting in the Soap Plant" which appeared in the June, 1939, issue of *Soap*, the following incident has been reported by Karl Heilbroner of Cambridge, Mass.: "For years, I made toilet soaps by saponifying tallow and coconut oil with some castor oil and a small amount of rosin. I made the first graining with brine to recover the glycerine. The second graining was made with caustic soda lye. The coconut oil I saponified separately, adding 3 to 4% of potash lye in order to secure a smoother cake of soap from the plodder. For years, I never had any trouble with the process. The soap came out smooth and fine and kept for years."

"Then I thought that I would change the process slightly and grain out the soap the second time with brine instead of caustic soda lye. The soap came from the plodder as smooth as ever, but after stocking the soap for six months, the cakes became rough on the outside and gave the feeling when using it that it contained sand. Of course, the first thing that I did was to go into the laboratory and tell the chemist to find out what was wrong. Analyses for various things did not bring out anything wrong. Considerable time was spent looking for the trouble, and finally we found it,—the salt content of the soap was 0.55% and this was too high in view of the KOH which I had used in saponifying the coconut oil. I found that the potash and the salt just did not agree, and after switching back to the old-time method, had no further trouble."

U. S. Methyl Cellulose

Methyl cellulose is now being produced on a commercial scale by the Dow Chemical Co., Midland, Mich., and is marketed under the trade name of "Methocel." This is the first production of this product in the United States, although it has been in use in Europe as an emulsifying agent and protective colloid for several years. It has been used abroad in toilet and laundry soaps, and as a thickening and emulsifying agent in shoe cleaners, hand creams, tooth paste, shampoos, and floor waxes. It is also used in water paints and a recent patent covers its use in shaving cream. (U. S. No. 2,085,733.) It is soluble in water and gives viscous colloidal solutions which have been used in dispersing materials which disperse with difficulty.

U. S. Industrial Alcohol Co., New York, recently appointed Hazard Advertising Corp., that city, to handle its industrial advertising account.

In the exhibit of Rohm & Haas Co. at the New York World's Fair their line of resins, plastic "Plexiglas" and "Crystalite," get principal attention. The latter product, they advise, will find use in molding containers for cosmetic soaps.

Johnson To Quaker Chemical

Albin Johnson, formerly with the research staff of E. F. Houghton, Philadelphia, has joined the technical development staff of Quaker Chemical Products Co., Conshohocken, Pa.

Wetting Power

(*From Page* 31)

um chloride produce increasing wetting power up to the highest concentration tested, 5.00 per cent by weight, which has a spreading coefficient of +3.1 dynes per cm. If substantially larger amounts of sodium chloride are added, the wetting agent may be salted out.

From these results it might be concluded that the wetting power of this particular wetting agent, and possibly of others, would be increased by "adulteration" with a neutral salt. This may be a partial explanation of the fact that some of these materials, as marketed, contain substantial amounts of a neutral salt such as sodium sulfate, whereas it is usually considered to be present merely as an impurity due to economic or practical limitations of the manufacturing process.

It should also be kept in mind that the concentration at which the tests are made may be an important factor in determining the relative efficiencies of various wetting agents.

Summary

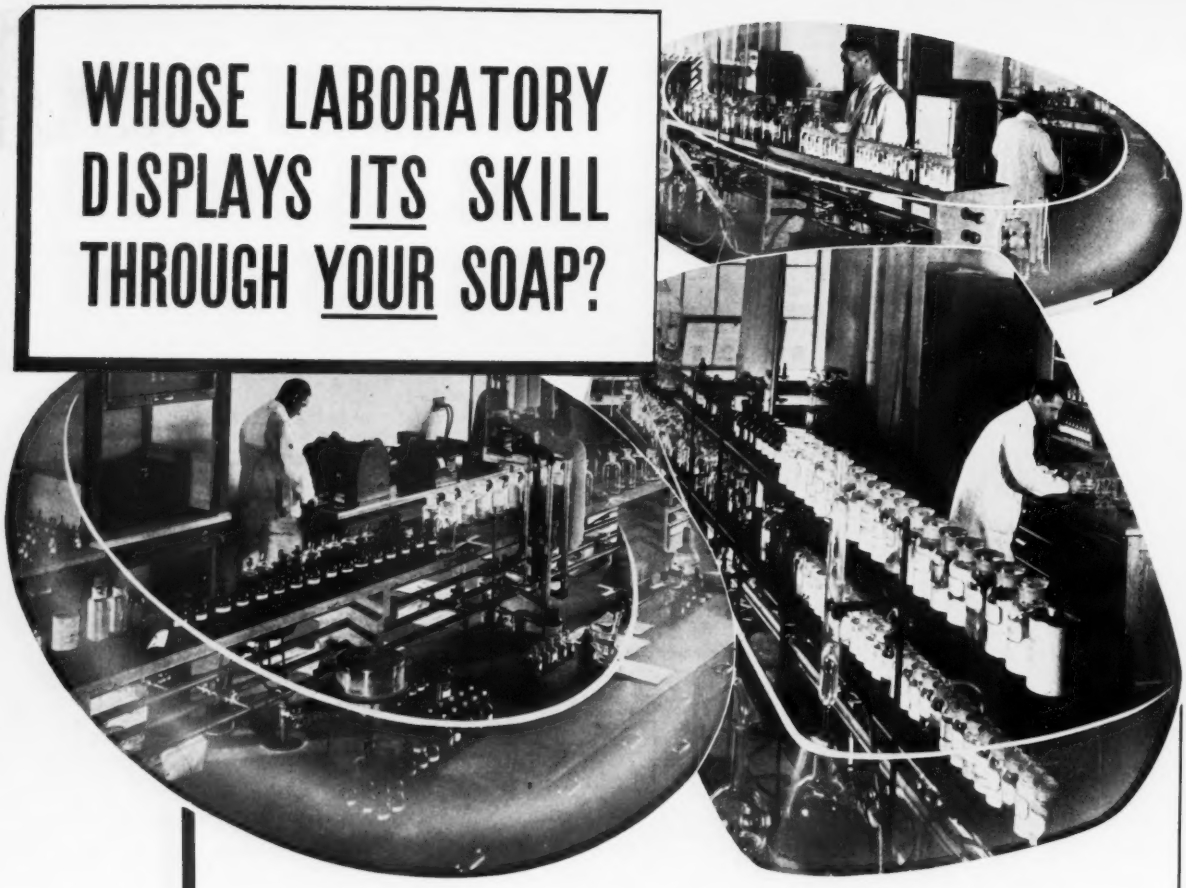
A modern synthetic detergent, a sulfonated ester of a dicarboxylic acid, has been found to show no precipitation in the presence of large amounts of calcium or magnesium.

Additions of chlorides of calcium, magnesium, or sodium to solutions of this wetting agent produce significant increases in wetting power, as measured by surface tension or by spreading coefficient on mineral oil. The improvement is so substantial as to indicate that this effect may be of practical importance in the formulation and use of these materials.

Literature

(1) Cupples, H. L. Wetting and spreading properties of aqueous solutions. Oleic acid-sodium hydroxide mixtures. Ind. Eng. Chem. 27:1219-1222. 1935.

WHOSE LABORATORY DISPLAYS ITS SKILL THROUGH YOUR SOAP?



. . . And is it the dependable skill of long experience? . . . skill in which you can **safely** repose your product's chances for success? In the opinion of those whose sales hinge primarily upon scent, these are highly pertinent questions and their answers outweigh all other considerations in importance. Even in matters of cost, they know it is far wiser to pay a fraction more for their perfume compounds and be **sure** of quality than to take chances with products of dubious origin or indifferent skill.

That is why we urge manufacturers of soap and other perfumed preparations to let our laboratories assist in working out practical and appealing odor bases for their products. And we urge further that they do this on a competitive basis. Then they will have an opportunity to compare results—to choose between a fine custom-made perfume created by FRITZSCHE specialists for their **exclusive** use and other suggested offerings. If you have a perfume problem pending, why not arrange with our Perfume Division NOW to make this odor comparison?

FRITZSCHE BROTHERS, Inc.

PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK, N. Y.

BRANCH STOCKS

BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.

FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Est. 1871

BIMS Golf Outing

More than ninety members attended the recent BIMS outing at the Tamarack Country Club, Port Chester, N. Y., with golf, as usual, the feature of the day, although good use was made of the Tamarack's swimming pool. Seventeen prizes were awarded to golf winners at the dinner that evening. The next BIMS outing has been set for Thursday, Sept. 14, 1939, at the White Beeches Golf and Country Club, Haworth, N. J.

Welch In Accident

Ambrose Welch, manufacturer and distributor of "Coal Oil Johnny" and "Prof" soaps, East Orange, N. J., recently fell under a moving train at the East Orange Station. He was removed to the Orange Memorial Hospital where surgeons said his condition is serious. Mr. Welch was at one time connected with the firm of Welch, Holme & Clark, where his cousin, P. A. Welch, was senior partner, and his father, J. H. Welch, junior partner. The three Welch's severed connections with the firm, however, and formed Welch & Welch, which was later bought by the Welch, Holme & Clark Co. Ambrose Welch then turned from the raw material supply business to the actual manufacture of soap, buying up the rights to manufacture "Coal Oil Johnny" soap, which he has continued to make up to the present time.

Colgate Liquid Dentifrice

Colgate - Palmolive - Peet Co., Jersey City, N. J., recently announced that a new liquid dentifrice, "Cue", will be marketed nationally this fall. This will be the third type of dentifrice offered by Colgate, who already sell paste and powder dentifrices. Benton & Bowles, New York, will handle the advertising.

McIver On Australian Trip

Daniel McIver, Sr., owner of Original Bradford Soap Works, West Warwick, R. I., and his wife, recently left for a trip to Australia. They plan to return home about Thanksgiving.

"I'm just as strong for playing safe as you are. But we are able to carry fewer unfilled containers this year because American Can's facilities are behind us. You see, they keep in close contact with our problems, and they're always ready to deliver what we want when we want it. That kind of service saves us overhead!"

CANCO AMERICAN CAN COMPANY, 230 PARK AVENUE, NEW YORK, N. Y.

Contracts Awarded

Buckingham Gets City Wax

The Department of Purchase of the City of New York has just awarded a contract to Buckingham Wax Corp., L. I. City, N. Y., covering the purchase over the next six months of 11,100 gallons of floor wax.

Panama Canal Soap Bids

Cudahy Packaging Co., Chicago, submitted the low bid of $96 on 2,000 lbs. scouring soap in a recent opening by the Panama Canal Supply at Washington, D. C. Other low bidders at the same opening were: Armour & Co., Chicago, $506 on 20,000 lbs. soap powder, and Newell-Gutadt Co., San Francisco, $44.50 on 1,000 lbs. grit soap and $236.25 on 7,500 lbs. laundry soap.

Powder Soap Bid

Unity Sanitary Supply Co., New York, submitted the low bid of 2.35c on 4,032 lbs. powder soap in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, Harley Soap Co., Philadelphia, bid low on 11,000 gals. toilet soap at 15.7c. and Colgate - Palmolive - Peet Co., Jersey City, N. J., was low on 6,750 lbs. grit soap at 6.2c.

Panama Canal Soap Bid

J. Eavenson & Sons, Camden, N. J., submitted the low bid of 1.69c on 125,000 lbs. soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Bleaching Powder Award

Pennsylvania Salt Manufacturing Co., Philadelphia, was awarded the contract on 3,000 lbs. bleaching powder at 3.24c in a recent opening by the Chemical Warfare Division at Edgewood Arsenal, Md.

Washington Soap Awards

Sterling Supply Corp., Philadelphia, was awarded the contract on 100,000 lbs. soap at 5.41c cwt. in a recent opening by the Treasury Procurement Supply at Washington, D. C. At the same opening, Iowa Soap Co., Burlington, Ohio, was awarded the contract on 10,000 lbs. soap at 10c a lb.

Metal Polish Bid

Mirax Chemical Products Corp., St. Louis, bidding on 5,004 lbs. metal polish paste, was low at 7.9c in a recent opening by the Post Office Supply at Washington, D. C.

Castile Soap Award

Industrial Distributors, Inc., New York, were awarded the contract on ten cans castile soap at $5.60 in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Navy Polish Bids

R. M. Hollinghead Corp., Camden, N. J., submitted the low bid of $4,982 on 83,000 pts. metal polish in a recent opening by the Navy Department, Washington, D. C. It also bid low on 540,000 pts. metal polish at $34,324.

Brooklyn Soap Bid

Newall-Gutradt Co., San Francisco, submitted the low bid of $3,654 on 110,000 lbs. salt water soap in a recent opening at the Brooklyn Navy Yard.

Soap Powder Bids

Armour & Co., Chicago, submitted the low bid on 313,360 lbs. soap powder at $8,688 in a recent opening by the Navy Department at Washington, D. C. At the same opening, Colgate-Palmolive-Peet Co., Berkely, Calif., bid low on 990,000 lbs. soap powder at $26,860.

Washington Soft Soap Awards

Crystal Soap & Chemical Co., Philadelphia, was awarded the contract on 50 drums of soft soap at $6.12 in a recent opening by the Treasury Procurement Supply. At the same opening, Jas. Good, Philadelphia, was awarded contracts on 50 drums of soft soap at $1.86, and on 100 cans of soft soap at 14.8c.

Treasury Soap Bid

Hunnewell Soap Co., Detroit, submitted the low bid of 3.25c on 4,375 lbs. grit soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Automobile Soap Bid

Crystal Soap & Chemical Co., Philadelphia, submitted the low bid of 4.22c on 1,250 lbs. automobile soap in a recent opening by the Treasury Procurement Supply at Washington, D. C.

Navy Grit Soap Bids

Day & Frick, Philadelphia, submitted the low bids on the following in a recent opening by the Navy Department at Washington, D. C. On 18,500 lbs. grit soap, $639.30; 18,000 lbs. grit soap, 3.1c; 5,600 lbs. grit soap, $215.60.

Chip Soap Bids

Kirkman & Son, Brooklyn, submitted the low bid on 16,000 lbs. chip soap at $872.80 in a recent opening by the Navy Department at Washington, D. C. At the same opening, Pioneer Soap Co., San Francisco, bid low on 6,000 lbs. chip soap at 5.9c.

Eastern Yards Soap Bids

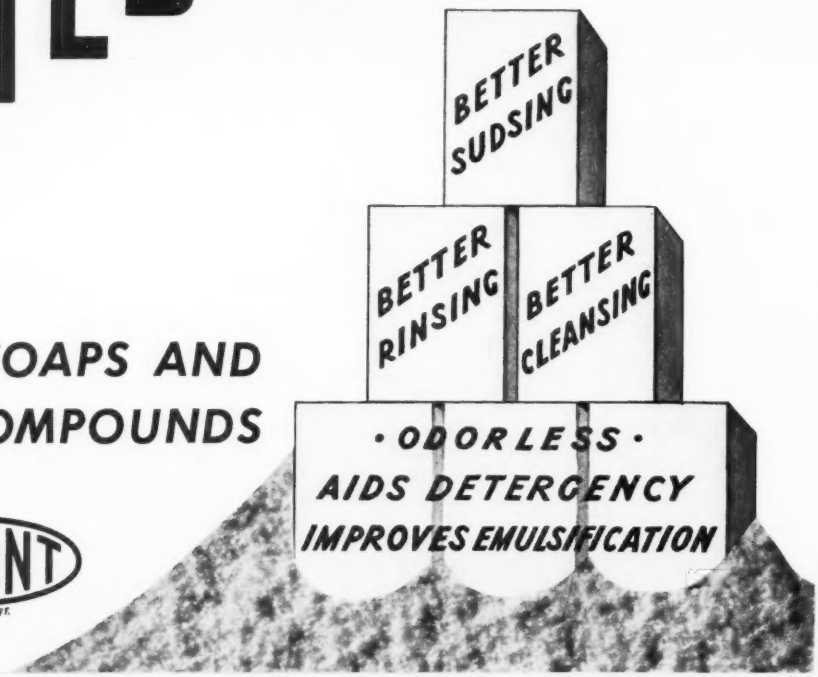
Kirkman & Son, Brooklyn, bid low on 31,000 lbs. laundry soap at $1,159.70 in a recent opening by the Navy Department for the Eastern Yards. At another opening, they bid low on 23,400 lbs. toilet soap at $1,526.41.

Bopf-Whittam Party

Bopf-Whittam Corp., lanolin manufacturer, Linden, N. J., recently celebrated the 25th Anniversary of formation of the company with a dinner dance party for employees at the Chanticler in Milburn, N. J. Arthur P. Bopf is president and original founder of the company.

A "BUILD UP"

FOR BETTER SOAPS AND CLEANING COMPOUNDS



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New Trade Marks

The following trade-marks were published in the August issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

HYTERGEN—This in stenciled letters describing soaps. Filed by The Hart Products Corp., New York, June 13, 1939. Claims use since June 9, 1938.

RODITE—This in solid letters describing rat exterminator. Filed by West Disinfecting Co., Long Island City, N. Y., March 8, 1939. Claims use since Dec. 22, 1938.

ACIDOLATE—This in solid letters describing sulfated materials to be used in soaps. Filed by National Oil Products Co., Harrison, N. J., June 16, 1939. Claims use since June 13, 1939.

LECTRO-LUSTRE—This in solid letters describing automobile polish and cleaner. Filed by The Black and Decker Manufacturing Co., Towson, Md., June 5, 1939. Claims use since April 14, 1939.

POWER-GLAZE—This in solid letters describing automobile polish and cleaner. Filed by The Black and Decker Manufacturing Co., Towson, Md., June 9, 1939. Claims use since April 14, 1939.

RED CAP—This in solid letters describing germicide. Filed by C. M. Kimball Co., Everett, Mass., May 23, 1939. Claims use since April 21, 1939.

BLUE DRAGON—This in solid letters above drawing of dragon, describing insecticides. Filed by J. M. Harris & Co., Roanoke, Va., May 29, 1939. Claims use since May, 1935.

DOO-DABS—This in letters in relief describing shoe cleaners. Filed by Osmic Chemical Co., Brockton, Mass., April 5, 1939. Claims use since March 1, 1939.

HARD-SOFT-HOT-COLD — This in solid letters, each word above a faucet from which emerges a stream of water, describing soap. Filed by B. Altman & Co., New York, May 22, 1939. Claims use since May 13, 1939.

DENTO-PAK — This in solid letters for container of tooth paste. Filed by Dento-Pak Corp., Boston, March 1, 1939. Claims use since Feb. 17, 1939.

E-Z-R—This in solid letters describing cleanser. Filed by E-Z-R Products Co., Glendale, Calif., May 23, 1939. Claims use since Aug. 14, 1938.

COSMETOL—This in stenciled letters describing cleaning material. Filed by The Emulsol Corp., Chicago, June 5, 1939. Claims use since Feb. 4, 1938.

ABBOTT—This in outline letters within octagon shaped figure, describing soaps. Filed by Abbott Laboratories, North Chicago, Ill., April 24, 1939. Claims use since May 13, 1931.

BRILLO—This in solid letters describing abrasive pad for polishing. Filed by Brillo Manufacturing Co., New York, April 28, 1939. Claims use since Aug. 10, 1937.

MYCOBRITE—This in solid letters describing cleaning preparation. Filed by Masury-Young Co., Charlestown, Mass., May 4, 1939. Claims use since Nov. 10, 1938.

MYCO DRESOAP—This in solid letters describing cleaning preparation. Filed by Masury-Young Co., Charlestown, Mass., May 4, 1939. Claims use since Jan. 15, 1938.

GENOCLENE — This in solid letters describing detergent. Filed by General Chemical Co., New York, May 17, 1939. Claims use since April 5, 1939.

PLOMO—This in solid letters describing cleansing powder. Filed by Plomocite Products, Inc., Denver, Colo., May 22, 1939. Claims use since March 1, 1939.

PLOMOCITE — This in solid letters describing cleansing powder. Filed by Plomocite Products, Inc., Denver, Colo., May 22, 1939. Claims use since March 1, 1939.

STAR WHITE—This in solid letters within outlined star, which itself is within a black circle, describing bleaching fluid. Filed by Dingman-Lorenz Laboratory, Pittsburgh, May 26, 1938. Claims use since May 10, 1938.

LUSTROL—This in solid letters describing shampoos. Filed by Standard Beauty Supply Co., New York, March 16, 1939. Claims use since Nov. 10, 1938.

NOR-DI—This in outline letters mounted upon an emblem, describing insecticides. Filed by New Chemical Products Co., Washington, D. C., April 25, 1939. Claims use since April 19, 1939.

DELBETAR—This in solid letters describing insecticides. Filed by Lois B. Beckwith, Manchester Center, Vt., May 11, 1939. Claims use since April 3, 1939.

BERAKO—This in shaded letters describing insecticides. Filed by Berako Co., Bound Brook, N. J., May 13, 1939. Claims use since Feb. 23, 1939.

RETH—This in solid script letters describing insecticides. Filed by Kentucky Color & Chemical Co., Louisville, Ky., May 15, 1939. Claims use since March 22, 1939.

"STOR-O-CIDE"—This in solid letters describing insect repellent. Filed by David M. Engelson, New York, May 16, 1939. Claims use since April 3, 1939.

JACK RABBIT—This in solid letters beneath drawing of running rabbit, describing a cleaning and water softening compound. Filed by Sugar Beet Products Co., Saginaw, Mich., Nov. 25, 1938. Claims use since June 1, 1938.

WATAWAX—This in solid letters describing cleaning compound. Filed by J. E. Johnson & Co., Chicago, April 12, 1939. Claims use since Dec. 1, 1936.

RETTO—This in solid letters inside of elipse, describing liquid dentifrice. Filed by Edward H. Heil,

Cleveland. April 20. 1939. Claims use since Oct. 1. 1938.

PEA-O-CIDE—This in stenciled letters describing insecticides. Filed by Derris. Inc.. New York. May 18. 1939. Claims use since April 5. 1939.

BEAN-O-CIDE — This in stenciled letters describing insecticides. Filed by Derris. Inc.. New York. May 18. 1939. Claims use since May 3. 1939.

HUEMITE—This in solid letters describing insecticides. Filed by Huemite. Inc.. Dayton. O.. May 19. 1939. Claims use since June 16. 1936.

Trade Marks Granted

369.448. Polish. Ralph E. Inson. New York. Filed Jan. 20. 1939. Serial No. 415.041. Published May 16. 1939. Class 16.

369.490. Soaps. Parfumerie Roger et Gallet. Societe Anonyme. Paris. Filed March 1. 1939. Serial No. 416.581. Published May 9. 1939. Class 4.

369.503. Polishing Compound. Welmaid Manufacturing Corp.. Chicago. Filed March 11. 1939. Serial No. 416.978. Published May 16. 1939. Class 4.

369.520. Shaving Cream. Colgate-Palmolive-Peet Co.. Jersey City. N. J. Filed March 21. 1939. Serial No. 417.328. Published May 16. 1939. Class 4.

369.523. Automobile Polish. Bennett Chemical Co.. Cambridge. Md. Filed March 23. 1939. Serial No. 417.395. Published May 16. 1939. Class 16.

369.527. Shoe Soap. Hecker Products Corp.. New York. Filed March 29. 1939. Serial No. 417.616. Published May 16. 1939. Class 4.

369.583. Soap Compounds. Shulton. Inc.. New York. Filed July 2. 1938. Serial No. 408.170. Published May 23. 1939. Class 4.

369.680. Powdered Cleanser. The Diversey Corp.. Chicago. Filed March 1. 1939. Serial No. 416.549. Published May 23. 1939. Class 4.

369.686. Soaps. Supreme Olive Oil Corp.. San Fernando. Calif. Filed March 3. 1939. Serial No. 416.661. Published May 23. 1939. Class 4.

369.699. Insecticide. W. H. Loomis Talc Corp.. Gouverneur. N. Y. Filed March 8. 1939. Serial No. 416.806. Published May 16. 1939. Class 6.

369.756. Insecticidal Preparations. Shell Oil Co.. San Francisco. Filed March 21. 1939. Serial No. 417.348. Published May 23. 1939. Class 6.

369.757. Insecticidal Preparations. Shell Oil Co.. San Francisco. Filed March 21. 1939. Serial No. 417.349. Published May 23. 1939. Class 6.

369.758. Insecticidal Preparations. Shell Oil Co.. San Francisco. Filed March 21. 1939. Serial No. 417.350. Published May 23. 1939. Class 6.

369.820. Water Softener. Charles D. Farmer. Detroit. Filed April 11. 1939. Serial No. 418.097. Published May 23. 1939. Class 6.

369.831. Insecticides. The National Broom Mfg. Co.. Pueblo. Colo. Filed April 17. 1939. Serial No. 418.354. Published May 23. 1939. Class 6.

369.916. Floor Polish. Lucas Paul Hart. La Mesa. Calif. Filed February 8. 1939. Serial No. 415.776. Published May 30. 1939. Class 16.

369.996. Wax Polish. Salem Chemical & Supply Co.. Salem. Mass. Filed April 10. 1939. Serial No. 418.064. Published May 30. 1939. Class 16.

Deny Light Task Differential

The request of factors in the soap industry that a tolerance in the wages paid to light task workers be allowed below the minimums set in the Walsh-Healey Act wage schedules has just been denied by Secretary of Labor Perkins. Light task workers were held to be part of the unskilled workers of the industry. Attention was called to the fact that the wages paid to them were included in the wage distribution table of unskilled workers on the basis of which the 40c minimum was fixed. The minimums set in the determination. in which members of the soap industry assisted the Bureau of Labor Statistics by attendance at several hearings in Washington. include a wage rate of not less than 40c an hour and a maximum work week of 40 hours. Regulations provide that workers on government contracts under the Walsh-Healey Act be paid at time and a half rates for hours worked in excess of eight a day or forty a week.

Study Fats and Oils Prices

Secretary of Agriculture Wallace. recently stated that the Department of Agriculture is considering three proposals for improving the prices of fats and oils. Chief among the proposals is the planned diversion of some edible fats and oils from food use to the manufacture of soap. The other two proposals considered the purchase of lard and other pork products for distribution to the needy. and the increasing of exports by financing through the Export-Import Bank. Secretary Wallace is definitely opposed to an export subsidy program on lard and other fats and oils. feeling that such a program is unwarranted. He contended that reciprocal trade agreements should bring increased exports. while the department's new food stamp program should increase domestic consumption.

Dreft Advertising Campaign

Procter & Gamble Co.. Ivorydale. O.. is conducting a newspaper advertising campaign in Western states. for its product "Dreft" soap powder. In the initial advertising. they offer a daily first prize of $100 and five secondary prizes of portable radios. The contest is to continue for thirty days.

Filtrol Advances Gwyn

Filtrol Corp.. Los Angeles. recently announced that H. M. Gwyn. Jr.. has been placed in charge of sales to the vegetable and animal oil industry. He replaces Henry Odeen. who resigned from the company.

Rumford Chemical Works. Rumford. R. I.. recently announced the appointment of H. B. Humphrey Co.. Boston. to handle its advertising.

Raw Material Markets

As of August 23, 1939

NEW YORK — The soap and sanitary chemical raw material market exhibited a definite downward trend this period. Hardly a commodity in the oils and fats list remained unchanged in price, the reductions being led by coconut oil which has reached the lowest level in several years. Only three price revisions were noted in the essential oil group and these were all downward. Several reductions took place in the chemicals, gum and wax market, while prices on pyrethrum extract were also lowered.

OILS AND FATS

Coconut Oil

Quiet conditions continued to prevail in the coconut oil market this period. The tone of the market was easier, being influenced by the downward trend of other products and by the absence of any improvement in demand. In the later half of the period, prices dropped ¼ cent per pound for tanks in New York, bringing a new low of 2¾ cents per pound. Futures on the Pacific Coast are being quoted at 2½ to 2⅝ cents per pound, which is equivalent to an ⅛ cent reduction from the previous period.

Grease

A fair inquiry for small or moderate quantities marked the grease market this period. An easy tone prevailed, in keeping with developments in competing products. Prices, as in the tallow market, dropped ⅜ cents per pound. The present quotations are 4½ to 4⅝ cents for the choice white material, and 3⅞ to 4 cents for yellow grease.

Linseed Oil

The linseed oil market maintained an easy tone this period in the absence of any broadening in trade. Consumers and dealers were disposed to hold off in view of favorable reports of new crops of flaxseed. Competition among crushers was sharp, and prices were reduced from ½ to one cent per pound. Quotations are 8.4 to 9.5 cents per pound for raw oil in barrels and 7.8 to 8.2 cents per pound for the same oil in tanks.

Olive Oil

There were no new features in the olive oil market this period outside of a one cent reduction in the price of the denatured oil, and a ⅛ cent reduction in the price of foots. There was a fair inquiry for moderate lots, but offerings for shipment were reported as being light. The new price on the oil is 80 to 81 cents per gallon, and on foots, 6¾ to 6⅞ cents per pound.

Rosin

Prices in the rosin market moved downward this period, after a slight upward movement in the previous period. The largest price change, however, was not more than 35 cents per barrel. The easier tone in this market was a reflection of sales of rosin held by the government under loans to producers. Demand, on the whole, was slow, generally limited to small lots for immediate shipment.

Tallow

The tallow market remained in an easy position during the period under review. Inquiries were light most of the time, while offerings were heavier than in the previous period. Quotations were reduced ⅜ cents per pound, the new ranges being 4¼ cents for the special, and 4⅜ cents per pound for extra.

Soap Builders

Are built soaps superior, or is building and filling primarily a cheapening operation? Theory and practice in soap building and filling, and a comparison of old and new builders, will be covered in a series of articles by Joseph Vallance of London beginning in an early issue of SOAP & SANITARY CHEMICALS.

PERFUMING MATERIALS

Anise

The situation in the anise oil market continued to be easy in a market favorable for the consumer. Although difficulty is being experienced in getting this oil outside of China, stocks in this country are much in excess of current demand. This is reflected in the new quotations for this period. The range being 63 to 66 cents per pound as compared with 65 to 67 cents per pound in the previous period.

Geranium Oil

The market on geranium oil continued to be competitive this period, as was evidenced by the drop in the quotation of the Algerian oil. This oil, after being quoted at $2.65 to $3.50 per pound in the previous period, is now at $2.35 to $3.00 per pound. This compares favorably with the range on Bourbon oil of $2.40 to $3.00 per pound.

Sassafras Oil

The sassafras oil market was very firm this period, on the basis of moderate spot supply and high replacement costs. Quotations were advanced from 36 to 37 cents per pound in drums, last period, to 39 and 40 cents per pound this period.

GUMS AND WAXES

Prices in the gum and wax market were characterized by a downward trend this period. Arabic gum was lowered ¼ cent on the amber grade and ½ cent on the white grade.

Raw Material Prices

(As of August 21, 1939)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P., drums	lb.	$ .05¾	$ .06¼
Acid, Boric, bbls., 99½%	ton	106.00	138 00
Cresylic, drums	gal.	.49	.50
Low boiling grade	gal.	.55	.56
Muriatic, C. P., carboys	lb.	.06½	.08
Oxalic, bbls.	lb.	.10¾	.12
Adeps Lanae, hydrous, bbls.	lb.	.16	.18
Anhydrous, bbls.	lb.	.17½	.19
Alcohol, Ethyl, U.S P., bbls.	gal.	4.56½	4.59½
Complete Denat., SD 1, drums, ex.	gal.	.27½	.30½
Alum. Potash lump	lb.	.036	.038
Ammonia Water, 26°, drums	lb.	.02	.02¼
Ammonium Carbonate, tech., bbls.	lb.	.08	.12½
Bentonite, 1, works	ton	—	16.00
Bentonite, 2, works	ton	—	11.00
Bleaching Powder, drums	100 lb.	2.25	3.35
Borax, pd., cryst., bbls., kegs	ton	58.00	74.00
Carbon Tetrachloride, car lots	gal.	.66½	.83
L. C. L.	gal.	.73	1.17
Caustic, see Soda Caustic, Potash Caustic			
China Clay, filler	ton	10.00	25.00
Cresol, U.S.P., drums	lb.	.10	.10½
Creosote Oil	gal.	.13½	.14½
Feldspar (200 to 325 mesh)	ton	14.00	15.00
Formaldehyde, bbls.	lb.	.05¾	.06¼
Fullers Earth	ton	10.00	30.00
Glycerine, C. P., drums	lb.	.12½	.13
Dynamite, drums	lb.	—	Nom.
Saponification, drums	lb.	.09	.10
Soap, lye, drums	lb.	.07¾	.07⅞
Hexalin, drums	lb.	—	.30
Kieselguhr, bags	ton	—	35.00
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	per bbl.	—	2.45
Mercury Bichloride, kegs	lb.	.99	1.13
Naphthalene, ref. flakes, bbls.	lb.	.05¾	—
Nitrobenzene (Mirbane) drums	lb.	.08	.09
Paradichlorbenzene, bbls., kegs	lb.	.12½	.15½
Petrolatum, bbls. (as to color)	lb.	.02⅝	.03⅞
Phenol (Carbolic Acid), drums	lb.	.13	.13¾
Pine Oil, bls.	gal.	.50	.59
Potash, Caustic, solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03⅛	.03¼
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.03	.03½
Pumice Stone, powder	100 lb.	3.00	4.00
Rosins (600 lb. bbls. gross for net)—			
Grade B to H, basis 280 lbs.	bbl.	5.15	6.20
Grade K to N	bbl.	6.20	6.35
Grade WG to X	bbl.	6.85	7.35
Wood	bbl.	4.10	5.75
Rotten Stone, pwd. bbls.	lb.	.08½	.10
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04⅛	.04½
Olive Castile, bars	lb.	.27½	.30
Olive Castile, powder	lb.	.27	.38
Powdered White, Neutral	lb.	.20	.22
Olive Oil Foot, bars, 68-70%	lb.	.09	.09½
Green, U.S.P.	lb.	.11	.13½
Tallow Chips, 88%	lb.	.07⅝	.07⅞
Soda Ash., cont., wks., bags, bbls.	100 lb.	1.08	1.35
Car lots, in bulk	100 lb.	.90	.95
Soda Caustic, cont., wks., solid	100 lb.	—	2.30
Flake	100 lb.	—	2.70
Liquid, tanks, 47-49%	100 lb.	—	1.95
Soda Sal., bbls.	100 lb.	1 10	1.30
Sodium Chloride (Salt)	ton	15.00	15.60
Sodium Fluoride, bbls.	lb.	.07½	.08¾
Sodium Hydrosulfite, bbls.	lb.	.16	.17
Sodium Metasilicate, ground	100 lb.	2.20	3.15
Crystalline	100 lb.	2.90	4.20
Sodium Pyrophosphate	100 lb.	5.10	5.55
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.21	.28
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	lb.	.02	.026
Zinc Oxide, lead free	lb.	.06½	.07¾

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.05¾	Nom.
Castor, No. 1, bbls.	lb.	.08¾	.09½
No. 3, bbls.	lb.	.08¼	.09
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.02¾	—
Tanks, Pacific Coast, futures	lb.	.02½	.02⅝
Copra, bulk, coast	lb.	.0160	—
Corn, tanks, mills	lb.	.04⅞	.05
Cottonseed, crude, tanks, mill	lb.	.05¾	.05⅞
PSY, futures	lb.	.07	.07¼
Fatty Acids,			
Corn Oil, tanks	lb.	.08	.08¼
Coconut Oil, tanks	lb.	.08	.08½
Cotton Oil, tanks	lb.	.07	.07¼
Settled soap stock	lb.	.02⅝	.02¾
Boiled soap stock, 65%	lb.	.03⅝	.03¾
Foots, 50%	lb.	.01⅛	.01⅜
Linseed Oil	lb.	.10	.10½
Red Oil, bbls., dist. or sapon.	lb.	.07⅜	.08⅛
Tanks	lb.	.06½	.07½
Stearic Acid,			
Double pressed	lb.	.10½	.11½
Triple pressed	lb.	.13¼	.14¼
Greases, choice white, bbls.	lb.	.04½	.04⅝
Yellow	lb.	.03⅞	.04
Lard, city	lb.	.05¾	.06
Linseed, raw bbls.	lb.	.0840	.0950
Tanks, raw	lb.	.0780	.0820
Boiled, 5 bbl. lots	lb.	.1010	.1030
Olive, denatured, bbls., N. Y.	gal.	.80	.81
Foots, bbls., N. Y.	lb.	.06¾	.06⅞
Palm, shipment	lb.	.03	—
Palm Kernel, shipment	lb.	.0340	Nom.
Sesame Oil, dms.	lb.	.09⅛	.09¼
Soya Bean, domestic tanks, crude	lb.	.04½	—
Stearine, oleo, bbls.	lb.	.05¼	.05½
Tallow, special, f.o.b. plant	lb.	.04¼	—
City, ex. loose, f.o.b. plant	lb.	.04⅜	—
Teaseed Oil, crude	lb.	.10	.10½
Whale, refined	lb.	.0710	.0730

(As of August 21, 1939)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$1.90	$2.00
Bitter, F. F. P. A.	lb.	1.95	2.05
Sweet, cans	lb.	.56	.57
Anise, cans, U.S.P.	lb.	.63	.66
Bay, tins	lb.	1.20	1.25
Bergamot, coppers	lb.	3.65	3.85
Artificial	lb.	1.25	1.30
Birch Tar, rect. tins	lb.	.60	.65
Crude, tins	lb.	.15	.18
Bois de Rose, Brazilian	lb.	1.55	1.60
Cayenne	lb.	1.50	1.75
Cade, cans	lb.	.41	.44
Cajeput, native, tins	lb.	.50	.52
Calamus, tins	lb.	5.50	6.00
Camphor, Sassy, drums	lb.	.28	Nom.
White, drums	lb.	.27	Nom.
Cananga, native, tins	lb.	1.05	1.25
Rectified, tins	lb.	1.50	1.80
Caraway Seed	lb.	1.65	1.70
Cassia, Redistilled, U.S.P.	lb.	.88	.93
Cedar Leaf, tins	lb.	.60	.62
Cedar Wood, light, drums	lb.	.28	.30
Citronella, Java, drums	lb.	.27	.28
Citronella, Ceylon, drums	lb.	.31	.33
Clove, U.S.P., tins	lb.	.97	—
Eucalyptus, Austl., U.S.P., cans	lb.	.41	.45
Fennel, U.S.P., tins	lb.	1.05	1.10
Geranium, African, cans	lb.	2.35	3.00
Bourbon, tins	lb.	2.40	3.00
Turkish	lb.	1.85	2.00
Hemlock, tins	lb.	.65	.70
Lavender, U.S.P., cans	lb.	2.00	4.75
Spike, Spanish, cans	lb.	1.05	1.10
Lemon, Ital., U.S.P.	lb.	3.30	4.00
Cal.	lb.	2.50	—
Lemongrass, native, cans	lb.	.38	.40
Linaloe, Mex., cases	lb.	1.25	1.30
Nutmeg, U.S.P., tins	lb.	1.12	1.15
Orange, Sweet, W. Ind., tins	lb.	1.70	1.75
Italian cop	lb.	2.00	3.00
Distilled	lb.	.50	—
California	lb.	1.00	—
Origanum, cans, tech	lb.	.90	1.00
Patchouli	lb.	3.35	6.50
Pennyroyal, dom.	lb.	2.10	2.15
Imported	lb.	1.85	1.90
Peppermint, nat., cans	lb.	2.05	2.30
Redis., U.S.P., cans	lb.	2.30	2.60
Petitgrain, S. A., tins	lb.	.80	.85
Pine Needle, Siberian	lb.	.95	1.00
Rosemary, Spanish, tins	lb.	.56	.75
drums	lb.	.51	.70
Sandalwood, E. Ind., U.S.P.	lb.	4.75	4.80
Sassafras, U.S.P.	lb.	.90	1.00
Artificial, drums	lb.	.39	.40
Spearmint, U.S.P.	lb.	1.70	1.75
Thyme, red, U.S.P.	lb.	.85	1.25
White, U.S.P.	lb.	.85	1.45
Vetivert, Bourbon	lb.	3.50	15.00
Ylang Ylang, Bourbon	lb.	2.50	3.00

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.30	$1.45
Amyl Cinnamic Aldehyde	lb.	2.00	2.25
Anethol	lb.	1.00	1.05
Benzaldehyde, tech.	lb.	.60	.70
U.S.P.	lb.	.85	.95
Benzyl, Acetate	lb.	.44	.49
Alcohol	lb.	.63	.68
Citral	lb.	1.40	3.10
Citronellal	lb.	.75	.80
Citronellol	lb.	1.60	1.85
Citronellyl Acetate	lb.	4.50	7.00
Coumarin	lb.	2.75	4.65
Cymene, drums	gal.	.90	1.25
Diphenyl oxide	lb.	.50	.55
Eucalyptol, U.S.P.	lb.	.55	.57
Eugenol, U.S.P.	lb.	1.70	2.15
Geraniol, Domestic	lb.	.67	3.00
Imported	lb.	2.00	3.00
Geranyl Acetate	lb.	1.20	2.50
Heliotropin	lb.	1.80	2.20
Hydroxycitronellal	lb.	2.00	2.50
Indol, C. P.	oz.	2.00	2.13
Ionone	lb.	1.30	4.05
Iso-Eugenol	lb.	3.00	4.25
Linalool	lb.	2.10	6.30
Linalyl Acetate	lb.	1.35	2.25
Menthol	lb.	3.00	3.35
Methyl Acetophenone	lb.	2.50	3.00
Anthranilate	lb.	2.10	2.30
Paracresol	lb.	4.50	6.00
Salicylate, U.S.P.	lb.	.35	.37
Musk Ambrette	lb.	3.25	3.65
Ketone	lb.	3.40	3.80
Xylene	lb.	1.00	1.25
Phenylactaldehyde	lb.	2.10	3.50
Phenylacetic Acid	lb.	1.75	3.00
Phenylethyl Alcohol	lb.	2.50	3.35
Rhodinol	lb.	5.55	10.80
Safrol	lb.	.50	.58
Terpineol, C. P., 1000 lb. drs.	lb.	.23	.24
Cans	lb.	.25	.30
Terpinyl Acetate, 25 lb. cans	lb.	.77	1.00
Thymol, U.S.P.	lb.	1.40	1.45
Vanillin, U.S.P.	lb.	2.10	2.35
Yara Yara	lb.	1.25	1.56

Insecticide Materials

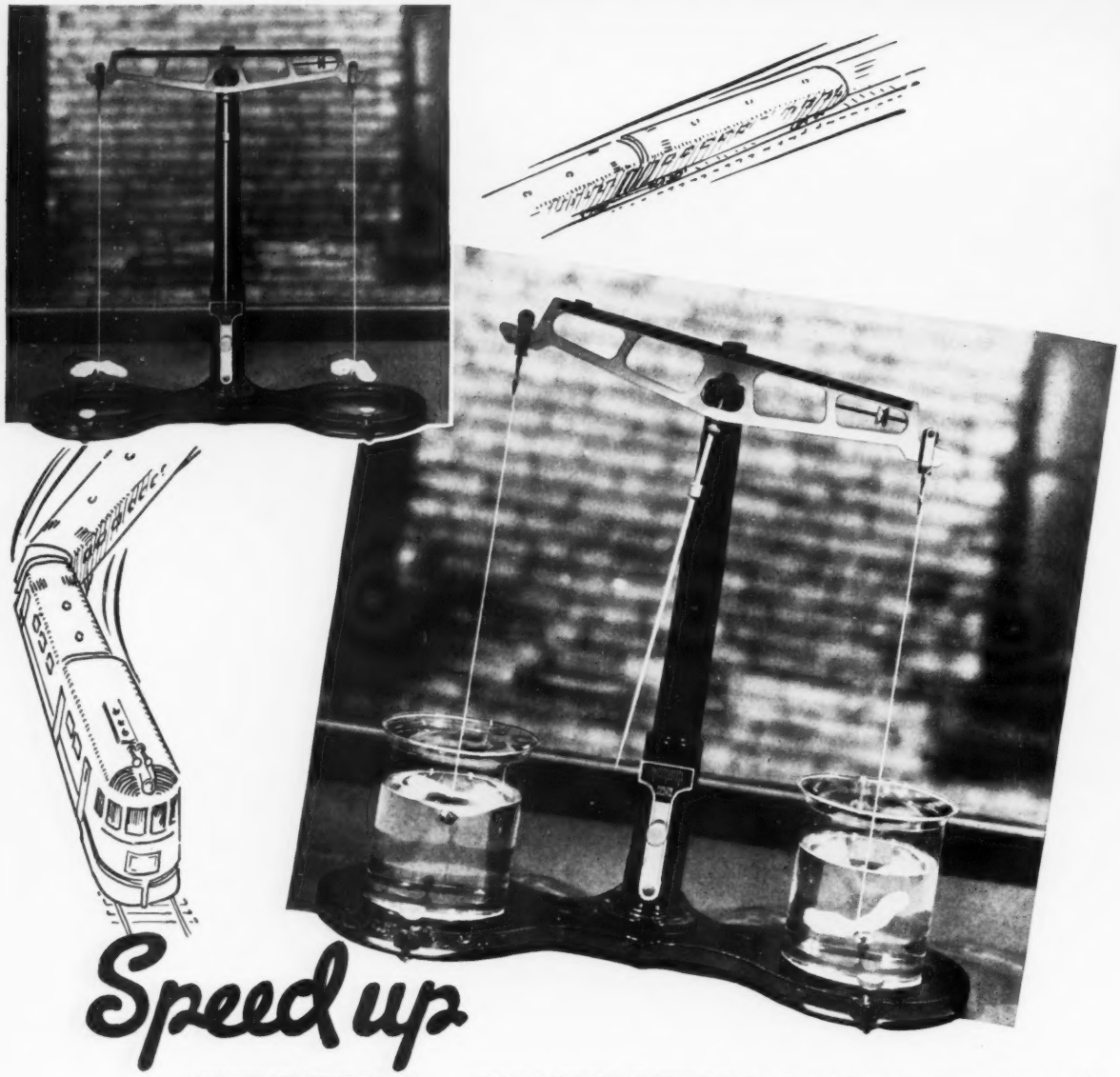
Insect Powder, bbls.	lb.	.35	.37
Pyrethrum Extract			
5 to 1	gal.	1.95	2.00
20 to 1	gal.	7.30	7.50
30 to 1	gal.	10.75	10.95
Derris, powder—4%	lb.	.18	.28
Derris, powder—5%	lb.	.24	.34
Cube, powder—4%	lb.	.20	.24
Cube, powder—5%	lb.	.24	.28

Gums

Arabic, Amb. Sts.	lb.	.10¼	.10¾
White, powdered	lb.	.12½	.13½
Karaya, powdered No. 1	lb.	.14	.23
Tragacanth, Aleppo, No. 1	lb.	2.25	2.85
Flake	lb.	.50	1.00

Waxes

Bees, white	lb.	.33	.36
African, bgs.	lb.	.19	.20
Refined, yel.	lb.	.25½	.31½
Candelilla, bgs.	lb.	.15½	.16
Carnauba, No. 1	lb.	.41	.42½
No. 2, N. C.	lb.	.35	.35½
No. 3, Chalky	lb.	.29	.30½
Ceresin, yellow	lb.	.08½	.11½
Paraffin ref. 125-130	lb.	.039	.040



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Tests show clearly that the silica content in sodium silicate greatly speeds up wetting action. The above photograph illustrates our point. Equal weights of cotton yarn skeins were evenly suspended on top of the solutions in the beakers. Left hand beaker contained one percent of an ordinary alkali; right hand beaker contained one percent of PQ Silicate of Soda. The yarn in the right hand beaker was saturated first, thus sinking into the solution.

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PQ SILICATES OF SODA

Production Section

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries.*

Oxygen Soap Powders

SOAP powders may contain an oxygen-evolving substance, the purpose of which is to exert a mild bleaching action on the materials being washed. Sodium perborate is the most used oxygen-evolving compound. It has the advantage of being reasonably stable when mixed with the other ingredients of soap powder in the dry state, and unlike sodium peroxide, it does not develop excessive alkalinity when dissolved.

Sodium perborate is best written $NaBO_2.H_2O_2.3H_2O$, although it is more commonly expressed $NaBO_3.4H_2O$. When heated in air to 150-200° C. sodium perborate is decomposed, oxygen being evolved and metaborate being left, $NaBO_2$. Perborate is soluble in water but above 30° C. it begins to decompose with the formation of borax, hydrogen peroxide and sodium hydroxide. Thus an aqueous solution of perborate is really an alkaline solution of hydrogen peroxide. The evolution of oxygen will depend to a large extent on the alkalinity of the medium since the stability of hydrogen peroxide decreases with an increase in alkalinity.

The usual grade of sodium perborate is a white free-flowing powder containing not less than 10 per cent of available oxygen. The amount of it in soap powders can be determined by titration with standard permanganate solution, 1 cc. of 0.1 Normal permanganate being equivalent to 0.0008 gram of available oxygen or 0.00769 gram of sodium perborate.

The oxygen evolved from perborate in soap powders functions mainly by bleaching stains on the material being washed. It is generally believed that it also loosens mechanically held dirt, reducing the necessity for scrubbing fabrics and thereby prolonging their life. A special use of oxygenated soap powder is with vat dyestuffs. The evolution of oxygen prevents the reduction and consequent loss of color of these dyes by reducing substances in the liquor, such as starch.

The main difficulty in using sodium perborate in soap powder is to render it sufficiently stable. Its activity should not decrease during storage. The rate of decomposition when the powder is dissolved in water and heated to boiling should be amenable to some control, so that a product can be marketed having the optimum rate of decomposition for household washing. Some stabilizing agent is needed. Sodium silicate, frequently a normal constiuent of soap powders, has a very desirable effect on the stability of perborate, both while it is in the carton and in the wash liquor, but it requires to be present in amounts which are undesirably large compared to the small amount of special stabilizing agents.

The most satisfactory of these agents appears to be covered by British Patent No. 378,973. This states that bleaching action is affected by the nature of the water used, being least when the water is very soft, and greater with hard water, varying with the source of the water. The addition of small amounts of soluble magnesium salts to perborate soap powder is suggested. Suitable magnesium salts are the sulfate, chloride and nitrate. The best percentage to add varies with the nature and proportion of other ingredients present, but is generally 0.1-0.3 per cent, calculated as magnesium oxide. The disadvantage with soft water apparently is the absence of magnesium salts.

Many substances accelerate the decomposition of perborate. The most common of these are the heavy metals and their salts, particularly copper and iron. Traces of these metals from steam blown through copper or iron pipes have been said to be a definite source of trouble.

A fixed composition for perborate soap powder is hard to recommend, since efficiency depends so much on the method of use. The stability will depend on the hardness of the water, duration of the boiling period, and the material from which the washing vessel is made. The composition is often varied according to the locality in which the powder is to be sold. As a rule such powders

contain 35-40 per cent of soap, 25-30 per cent of soda ash, 5-10 per cent of sodium silicate, 25 per cent of moisture, 5 per cent of sodium perborate, and possibly small amounts of other materials. Borax is a common ingredient for powders for washing silks and woolens. Trisodium phosphate may be added to improve lathering power. Sodium metaphosphate prevents precipitation of a lime scum.

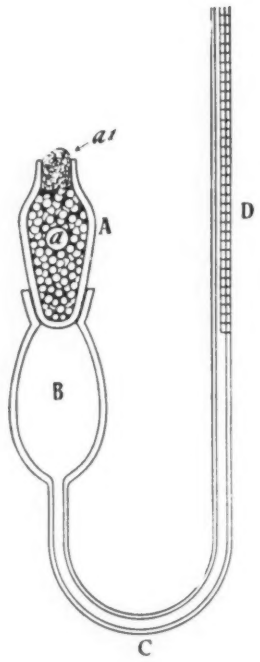
Concerning the soap base, the only limitation that perborate places on this is that it would be inadvisable to include oils which oxidize easily. Perborate is usually added in the final stage of processing to avoid high temperatures. If the powdered soap used is made by spray drying, the perborate must be incorporated after this stage of manufacture. J. B. Angus. *Industrial Chemist* **15**, 268-9 (1939).

Dilatation Value of Hydrogenated Oils

MIXTURES of hard fats or waxes and liquid oils do not show a mathematical explanation of their melting points. E.g., equal parts of a hard fat melting at 50°C. with one of a liquid oil melting at 10°C. do not give a mixture with a melting point of 30°C. This is due to the mutual solubility of the various solid phases and their own partial point of crystallization, which results in retarded sweating.

With the advent of hydrogenated oils many assumed that such fats with a definite guaranteed melting point were bound to be equal in regard to their chemical and physical constants. If oils are hydrogenated to partial saturation, the manufacturer can guarantee a number of characteristics such as melting point, saponification value, iodine value, titer of fatty acids, etc. Even knowing these values it is impossible to guarantee that the final product of these fats, such as soap or cosmetic products, will not soften or sweat, without a dilatation test.

The reason that hydrogenated oils having the same iodine value and melting point vary after a time in physical properties, is because of differences in the rate of hydrogenation, the ratio of hydrogen to oil, etc. With too rapid hydrogenation, a less homogeneous oil is obtained, consisting of a greater portion of liquid oil and a smaller portion of high melting-point fat. With a more controlled process the safe melting point is obtained but a product consisting of less liquid oil and a greater portion of low melting-point fat. With a hardened fat, unless hardened to saturation, a ratio of liquid phase to solid phase exists at any given temperature. This ratio is known as the dilatation number at the temperature required. It follows that with two fats with identical melting points, say 35°C., at 30°C. one will contain more liquid phase than the other and this is the fat which is more prone to sweating.



A is a ground-glass stopper, exact-fitting, with rounded bottom filled with lead shot a, plugged with cotton wool, a^1. The bulb B holds 7 grams of fat, and is attached by capillary tube C to graduated pipette D

The dilatation test referred to is carried out by measuring the volume of a weighed quantity of fat at an exact temperature well above its melting point, solidifying the fat and again measuring its volume at an exact temperature well below its melting point. Its volume is again measured just below its melting point. From these figures the dilatation value is calculated.

The apparatus required is a water bath with temperature controlled to one-tenth of a degree C. This should be fitted with a clip to hold the dilatometer tube described, and a thermometer ranging from 10 to 70°C., easily readable to one-tenth of a degree.

As shown in the figure, the tube consists of a one cc. pipet graduated to tenths and approximately 10-12 inches long. This is fused directly to a glass-stoppered bulb designed to contain about 7 grams of fat. To make the determination, first melt and filter the fat into a round bottomed flask, attach flask to vacuum and shake and heat until gas-free. By means of a pipet place 1 cc. of cooled, recently boiled, air-free distilled water in curved tube C, place stopper A in bulb B, and weigh the whole apparatus accurately.

Pour into B the hot melted fat, and when this has reached the bottom of the ground neck carefully insert previously warmed stopper A. The rounded bottom of the stopper will displace the fat up the sides of the neck, and B should then be filled with gas-free fat with no air bubbles entrapped beneath the stopper. The apparatus is wiped free from fat on the outside or washed with a little mixed ethers, and the whole reweighed.

Assuming that the sample is one of hydrogenated oil melting at

33°C., the weighed apparatus is placed upright in the water bath at 40°C. until a constant reading is obtained on the pipet. This is reading A. The dilatometer is then packed in ice for at least an hour, then put back into the water bath filled with water below 10°C., and the temperature gradually brought to 20°C. and kept there until a constant reading is obtained on the pipet. Next gradually bring the temperature to 30°C. and obtain reading C. The value is calculated from the formula:

$$\frac{C - \frac{1}{2}(A + B)}{W} \times \frac{1{,}000}{1}$$

equals dilatation value at 30°C.
A equals 1st reading at 40°C.
B equals 2nd reading at 20°C.
C equals 3rd reading at 30°C.
W equals weight of fat.
If the fat melts at a little above 40°, similarly take the first reading at 60°, the second at 20° and the third at 40°. Alex. G. Willsmer. *Soap, Perfumery and Cosmetics*, June 1939, 501-2, 534.

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Sulfated Alcohols

Crude secondary aliphatic alcohols having a hydroxyl value of 190-230 and boiling at 200-300°C. are mixed with primary aliphatic alcohols containing about 10-20 carbon atoms in the molecule. The mixture is sulfonated by means of the products obtained by treating a metal chloride or sulfate with chlorosulfonic acid. Chlorides or sulfates of metals are used that give soluble salts with the products. Residual hydrochloric acid or any bisulfate present is finally neutralized. The crude alcohols are those obtained by (a) oxidizing paraffins, saponifying the resulting mixture of products and extracting the alcohols present, (b) fractionally distilling the products obtained by the catalytic hydrogenation of carbon monoxide or carbon dioxide, or (c) the catalytic hydrogenation of ketones. The products have wetting, sudsing, emulsifying and detergent properties. Arnon O. Snoddy, to the Procter & Gamble Co. British Patent No. 499,542.

Products and Processes

Oil Shampoo

Most of the so-called oil shampoos contain very little unchanged oil but derive their name from a viscous oily appearance. The basis is ordinarily sulfonated castor oil, as in the following: 55 parts of 100 per cent Turkey red oil, 5 parts of vaseline oil, 40 of water, and enough 25 per cent caustic soda solution, or better yet, triethanolamine, for clarification and neutralization. *Seifensieder-Ztg.* **66,** 512 (1939).

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Palm Bichromate Bleaching

Bleaching with bichromate, as of palm oil, is carried out as follows: The oil is first melted, then cooled to about 50°C. and put into a lead container. For 1,000 kg. of oil, about 12 kg. of sodium or potassium bichromate are dissolved in a little warm water. This solution is added to the oil with stirring, then 50 kg. of concentrated hydrochloric acid added. The mixture is stirred for about a half hour. After this operation the oil has a dirty green color. Stirring is discontinued and 25 per cent of boiling water is sprayed onto the oil and the mixture allowed to settle. After about 2 hours the oil is ready for other treatment as desired. If it should still be green it can be transferred to another vessel and treated again with 10 per cent of fresh water and 0.1 per cent of hydrochloric acid. The mixture is boiled for 10 minutes and allowed to settle. R. Fussteig. *Les Matieres Grasses* **31,** 122-3 (1939).

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Milk and Protein Soaps

In milk soaps it is the casein, a protein, which plays the chief part. Protein in soap tones down its alkaline action and tends to produce a stronger and creamier lather. Skimmed milk powder is the form of milk used in soaps. In this condition it is defatted, an important point because of the readiness with which milk fat turns rancid. A preservative should also be present, the most suitable being the esters of parahydroxybenzoic acid. A little alkaline material is added to make the protein more water-soluble.

Instead of milk powder, proteins themselves may be added to soap. These include casein, lactic-acid casein being the most suitable,—blood serum, either in the form of a dry powder or as a mass which is just liquid and therefore easily soluble,—and gelatin, which requires a swelling treatment in water to solubilize it. The Lamepons are also used, being protein-fatty acid condensates formed from protein degradation products.

Typical examples of protein shampoo powders are the following:

	Parts
1. Powdered soap	60-70
Milk powder	12
Borax	8
Sodium bicarbonate	20

Mix and sieve the powder.

	Parts
2. Soap powder	60
Lamepon KP	10
Borax	15
Sodium bicarbonate	15

Another formula for a solid protein soap is: Soap 80 parts, milk powder 15, triethanolamine 1, and 10 per cent gelatin gel 4 parts. This should contain about 0.4 per cent of preservative. Shaving soaps of creamy consistency are improved in mildness and wetting power by including 1-5 per cent of protein bodies. Josef Augustin. *Soap, Perfumery and Cosmetics* **12,** 586-8, 618 (1939).

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Dispersing Agents

Sulfonic esters obtained from cymenesulfonic acids and alcohols or phenols containing less than 8 carbon atoms are treated with tertiary monoamines. The products are wetting and dispersing agents and auxiliary agents in printing. Such quaternary ammonium compounds are obtained by heating the methyl ester of cymenesulfonic acid with pyridine and triethanolamine. Soc. pour l'ind. chim. a Bale. French Patent No. 836,553.

Resinate Soap

The transparent suds of resinate soap (soap-in-water system) form insoluble flakes of the water-in-soap system which precipitate at room temperature. At higher temperatures, 35-87°C., the system is suspended in the solution, and at approximately 100°C. it rises to form a heavy layer. The rate of precipitation and stratification depends on the soap concentration (5-40 per cent) and the content of electrolyte such as sodium chloride. The optimum concentration of the latter is 0.3 per cent. M. Strunnikov and A. Laptev. *Masloboino Zhirovoe Delo* 14. No. 5. 19-21; through Chem. Abs.

Distilling Fats

In a multistage process for distilling oils or fats by contact with hot furnace gases moving in countercurrent to the fats, the liquids traverse the several stages downward and the gases upward, while the liquids and gases move exclusively horizontally in each stage. Karl W. R. Apostel. British Patent No. 500.375.

Oil Purification

Fatty oils are treated with liquid sulfur dioxide. The sulfur dioxide-extract contains mostly unsaturated constituents, which may be obtained by evaporating off the sulfur dioxide at about 50°C. and treating with soda. The treated fatty oil left after separation of the extract consists mostly of saturated compounds. These are refined by removing any sulfur dioxide present by distillation or by adding soda, calcium hydroxide or magnesium hydroxide. Edeleanu G.m.b.H. German Patent No. 669.620.

Soap Production

Soap is produced and the glycerine liberated removed by saponifying proportioned amounts of a saponifiable material with a saponify-agent, and continuously introducing a stream of the soap products into a vapor-separating chamber maintained under a partial vacuum. Sufficient heat is applied to the saponified product to separate at least a portion of the glycerine in the vapor state. The vapor is continuously removed from the chamber at such a rate as to maintain the partial vacuum. Soap is withdrawn without materially impairing the vacuum. Refining, Inc. Canadian Patent No. 382.953.

Cottonseed Oil Soaps

Cold saponification of 2 parts of cottonseed oil with 1 part of 28 per cent caustic soda solution (d. 1.320) gave a neutral, solid soap of ivory-like appearance. The product however, was difficultly soluble in cold and hot water. A readily soluble soap containing 65.3 per cent of fatty acids was obtained by incomplete saponification. This was done by treating 475 grams of cottonseed oil and 12 grams of cottonseed-oil fatty acids with 220 grams of caustic soda of d. 1.270 (80 per cent of the theoretical amount). No oil separated from the dilute solution of the soap in 10 days. The unsaponified portion could not be separated by the usual known methods. The soap could also be used as an emulsion in turpentine. I. E. Feigin and G. S. Pomerants. *Khlopchatobumazhnaya* Prom. 7. No. 5, 28-9; through Chem. Abs.

Stabilizing Soap

Deterioration and rancidity development in soap are inhibited by the addition of a small proportion, about 0.1 per cent, of betaphenyl thiourea or other substituted thiourea. George D. Martin, to Monsanto Chemical Co. U. S. Patent No. 2.154.341.

Refining Oils

Vegetable oils and fats are refined by successive treatment with alkaline lye, preferably caustic potash, with alkali silicate and finally, after washing with water, with an acid reagent such as potash alum, to correct the alkalinity due to the first two treatments. Paul Jean Beyer. British Patent No. 498.209.

Fish Oil Fatty Acids

The optimum conditions for the production of fatty acids from whale and seal oil, and soapstock of dark cottonseed oil by treating the crude fats with caustic soda solutions at elevated pressures were studied. Odorless and colorless fatty acids with low molecular weights were obtained by autoclaving the fats with 100 per cent excess of 9-16°Be. caustic soda at 230°C. for 3 hours. By this method the iodine number is reduced to 95-97 and the products are freed from the fishy odor. Any peculiar odor can be removed completely by salting out the soaps and decomposing with sulfuric acid. The fatty acids are resistant to atmospheric oxygen and give good soaps. A. A. Bag, T. P. Egupov, A. Lavrova and F. Rakhmatulin. *Masloboino Zhirovoe Delo* 14. No. 5. 21-4; through Chem. Abs.

Sulfonated Compounds

Sulfonation products of unsaturated or hydroxylated aliphatic compounds with more than 8 carbon atoms in the chain, are prepared by treating higher unsaturated aliphatic amines in a liquid or dispersed form, with a sulfonating agent at a temperature above 0°C. An example is the sulfonation of octadecenylamine by concentrated sulfuric acid. The products are used in the textile, leather and fat industries and as insecticides. Böhme Fettchemie-G.m.b.H. German Patent No. 669.541.

Fatty Acid Recovery

High molecular-weight fatty acids or their soaps are recovered in pure form from crude mixtures such as in the oxidation products of paraffin or the hydrogenation products of coal and tar, by saponification and extraction of the unsaponifiable constituents by means of a mixture of a fat solvent such as benzine, xylene, carbon tetrachloride etc. with a monohydric alcohol, ether, ester or ketone. The purified soap is then treated with mineral acid to liberate the fatty acids. With crude products containing a large amount of unsaponifiable constituents, a preliminary extraction with the low molecular-weight alcohols, ethers, esters or ketones is preferably effected before the major step. I. G. Farbenindustrie A.-G. British Patent No. 494.853.

Soap Structure Variations

EVEN when soap is made from exactly the same stock, different methods of drying it will produce differences in the physical nature of the finished soap. Neat soap in the liquid condition in the pan is essentially in the form of liquid crystals. When this soap is allowed to cool slowly in frames, it passes gradually into a heterogeneous mixture of innumerable hydrated soap fibers enmeshing solid solutions of the more soluble type, with a fairly high degree of orientation in internal structure. The orientation of structure is visible externally in "feather," in silky sheen, or sometimes in opalescence.

Soap cooled rapidly by passing over a revolving cooled drum consists of a fairly uniform mixture of solidified neat soap having the original liquid-crystal structure, and very fine and irregular soap fibers, with practically no orientation. Soap from which moisture has been driven off in shallow steam-heated pans consists almost entirely of a solution of soap, mostly in the form of liquid crystals, in water.

Apparently unexplainable differences in the quality of products, especially in regard to the solubility of the soap and the viscosity of its solution, may be attributed to the presence of the different forms of soap described. Disturbance in the unstable equilibrium conditions existing in the dried chips is brought about during the process of milling and plodding, but a new state of unstable equilibrium results. For example, two pure sodium stearate soaps made by two different firms showed quite different properties in solution. This was explained at the time of comparison as due to the presence of unsuspected impurities in one, but in fact was more probably due to a difference in the making of the two soaps.

The growing use of hydrogenated fats for making soap brings its own problems. The melting point or iodine value of the hydrogenated fat is not necessarily a criterion of its soap-making properties. Hydrogenated fats having identical melting points or iodine values may differ widely in their chemical constitution, according to whether they are made from fish oil or vegetable oils. Different proportions of solid isomeric oleic acids may be produced. These isomeric oleic acids have rather poor soap-forming properties. The nature of soaps made from different kinds of hydrogenated fats needs further study.

Most defects are the result of undue stress and strain produced in the soap tablet. Defects become more prominent as the transformation from the unstable gel or plastic condition to the more stable crystalloidal or rigid state gradually proceeds. There is considerable ground for the scientific study of the effect of strain on soap tablets. This might lead to a proper relationship between the size and shape of the finished tablet and those of the bar of plodded soap, also to a knowledge of the optimum stamping pressure for the different kinds of soap, in order to minimize defects. N. G. Chatterji. *Indian Soap J.* **5,** 298-302 (1939).

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Soap Phases

Dilatometric measurements and microscopic examination show that anhydrous sodium palmitate has at least 5 successive phase changes between 70° and 300°C. The phases are: Curd fibers, up to 117°; subwaxy soap, 117-135°; waxy soap, 135-208°; subneat soap, 208-253°; neat soap, 253-292°; and isotropic liquid above 292°C. One or more of these phases may be found during the process of soap manufacture and may persist in some mixtures for long periods of time at room temperature. These transitions may all be regarded as successive stages of melting, the phases intermediate between crystal and liquid being of a mesomorphic nature.

The existence of this large number of hitherto unrecognized soap phases makes necessary a considerable extension of the previous phase-rule work, particularly because of the possible importance of the waxy phases in soap technology. These phases are not found at kettle temperatures in systems of pure sodium palmitate and water. However, one of them does exist at 90°C. in the sodium laurate-water system, and experiments under way on mixed anhydrous systems of sodium palmitate and sodium laurate show that it can exist even as an equilibrium phase at much lower temperatures. In many systems it is quite likely that the curd-fiber phase is not formed directly from neat soap on cooling, as has always been supposed. It is even possible that some commercial mixtures may remain in the subwaxy or waxy state for long periods, forming genuine curd fibers only on aging, if at all. Robert D. Vold and Marjorie J. Vold. *J. Am. Chem. Soc.* **61,** 808-16 (1939).

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Hydrogenated Porpoise Oil

Crude porpoise oil when refined with 5 per cent excess of 14.5 per cent caustic soda solution and then treated twice with 0.5 per cent of kieselguhr, formed an easily filterable, colorless oil with acidity of 0.38-0.42. Hydrogenation of the oil in the presence of 0.45 per cent of nickel catalyst at 240-70°C. for 1 and for 1½ hours gave fat mixtures melting at 43-5°C. and 59.5°C. respectively. I. P. Petryaev. *Masloboino Zhirovoe Delo* 14, No. 5, 17-18; through Chem. Abs.

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Friable Soap

A method of making a friable soap which will absorb moisture directly and uniformly consists of cooling substantially anhydrous soap from a molten, plastic or semiplastic condition to form planes of incipient fracture throughout. Refining, Inc. Canadian Patent No. 382,955.

Complete Unit for Milling and Plodding
TOILET SOAP

Capacity 1,000 lbs. per hour (once through).
Unit consists of:

One (1) Ideal Amalgamator, with motor.
One (1) Three-Roll Chilled Iron Water Cooled Mill.
One (1) 10″-Preliminary Plodder fitted with Screen.
One (1) Three-Roll Chilled Iron Water Cooled Mill.
One (1) 10″-Preliminary Plodder fitted with Screen.
One (1) Conveying Screw with motor.
One (1) 10″-Finishing Plodder fitted with Electric Heater and Forming Plate.
One (1) Automatic Bar and Cake Cutter.

Unit operated by (2) 15-H.P.—(1) 10-H.P.—(1) 5-H.P.—(1) ½-H.P. Motors. Roller Chain Drives. Complete Weight 24,000-lbs. Floor Space 15-ft. x 21-ft.

We have recently installed a unit for making 5,000-lbs. of Toilet Soap per hour, taking two bars at a time from the Plodder and Automatic Bar and Cake Cutter.

These units are only recommended for long runs of Soap. We will be pleased to give further particulars upon request.

HOUCHIN MACHINERY CO., Inc.

HAWTHORNE, NEW JERSEY, U. S. A.

Fat and Detergent Progress

A REVIEW of the progress made in the soap industry, both as to raw materials and methods of manufacture, was given at a recent symposium of the Society of Chemical Industry at Exeter, England, in a paper by P. W. Tainsh which appeared in *Chemistry and Industry* 58, 587-91 (1939). New knowledge of the composition of oils and fats is of most importance to the soapmaker, since he can formulate his fat charge in terms of fatty acids rather than as formerly on the basis of an empirical knowledge of the behavior of the fats and oils themselves. In this way he is able to predict much more accurately the properties and behavior of his soap and to keep those properties constant under the handicap of varying raw materials. Today the fatty-acid composition of about 300 fats is known, as contrasted with 1/10 that number 15 years ago.

Hydrogenated whale oil produced under the correct conditions can be regarded as an almost perfect substitute for tallow in soapmaking. By the use of centrifugal machines up to 600 tons of whale oil per day per factory ship can be purified and stored in bulk for indefinite periods without fear of deterioration. Rotary cookers have brought the efficiency of oil extraction from the blubber up to 99-99.7 per cent. Evidence during the last few years shows that this technical progress has resulted in the stock of whales being rapidly depleted. It appears that unless the industry can be subjected to rigid control and regulation its end may not be so very far off.

Palm oil is another good substitute for tallow. The total world supply of palm oil has more than doubled during the last ten or twelve years. Improvements in both quality and output have taken place; production in the Dutch East Indies and Malaya have increased from 23,000 tons in 1928 to over 270,000 tons in 1938.

The main soft oils used by the soapmakers are still coconut and palm-kernel oil. Soybean oil is useful but the quantity used in proportion to the other two oils is comparatively small. While the bean has been cultivated extensively in the United States, efforts to find a bean suitable for cultivation in England have not met with much success economically.

In 1931, the Standard Oil Co. of Louisiana in conjunction with the I. G. Farbenindustrie erected an experimental plant capable of producing 3 tons of synthetic fatty acids per day. A large-scale plant is expected to be operating in Germany by the end of 1939. With coal as the raw material, synthetic fatty acids may be of value under war conditions, but it is difficult to imagine that they will ever be a serious competitor to natural oils and fats, because of the low price of the latter. Also we are dependent on the soapmaking oils and fats for our supplies of glycerine, and any extensive replacement of natural fats by synthetic fatty acids in war time would mean that glycerine also would have to be produced by synthetic methods.

Activated bleaching earths are now used extensively for purifying oils and fats. Activated earths are obtained by treating the natural earths with hydrochloric or sulfuric acid and washing to a limited free-acid content. Tallow is still bleached by treatment with activated carbon after neutralization.

The Lea test which gives a measure of the peroxide content of oxidized fats, is probably the most useful test for rancidity, although no one test is a sufficient measure of incipient deterioration of a fat. The most effective preservatives so far known have an adverse effect on the color of soap so that their application is limited. Research into the nature and properties of antioxidants has hardly yet begun.

Processing changes which have taken place in soapmaking include removal of impurities in the soap by centrifugal machines and by straining and filtering devices.

In the last few years the comparative merits of soap and the soapless detergents have been thoroughly investigated. For general purposes the newer detergents appear to be still inferior to soap. None of them is particularly effective for washing cotton or linen goods. They are especially suitable for the treatment of woolen fabrics and are finding some applications in the technical field, and for shampooing purposes.

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Universal Buffer

A universal buffer is made to cover the pH range from 2.6 to 12.0 by adding the correct amount of 0.2 Normal sodium hydroxide solution to another special solution. The latter contains 6.008 grams of citric acid, 3.893 grams of potassium dihydrogen phosphate, 1.769 grams of boric acid, and 5.266 grams of diethylbarbituric acid, all dissolved in water and made up to one liter. The pH values of mixtures of 100 cc. of this solution with various quantities of 0.2 Normal sodium hydroxide solution free from carbonate, are as shown:

pH	cc. 0.2*N* NaOH	pH	cc. 0.2*N* NaOH
2.6	2.0	7.4	55.8
2.8	4.3	7.6	58.6
3.0	6.4	7.8	61.7
3.2	8.3	8.0	63.7
3.4	10.1	8.2	65.6
3.6	11.8	8.4	67.5
3.8	13.7	8.6	69.3
4.0	15.5	8.8	71.0
4.2	17.6	9.0	72.7
4.4	19.9	9.2	74.0
4.6	22.4	9.4	75.9
4.8	24.8	9.6	77.6
5.0	27.1	9.8	79.3
5.2	29.5	10.0	80.8
5.4	31.8	10.2	82.0
5.6	34.2	10.4	82.9
5.8	36.5	10.6	83.9
6.0	38.9	10.8	84.9
6.2	41.2	11.0	86.0
6.4	43.5	11.2	87.7
6.6	46.0	11.4	89.7
6.8	48.3	11.6	92.0
7.0	50.6	11.8	95.0
7.2	52.9	12.0	99.6

The buffer mixture is of considerable value in the rapid preparation of solutions of definite pH. The results were found trustworthy to within a small fraction of a pH unit. W. C. Johnson and A. J. Lindsey, *Analyst* **64**, 490-1 (1939).

THIS year, the 17th Exposition of Chemical Industries offers you a dramatic pageant of progress made possible by the exhibits of more than three hundred of the most progressive manufacturers in the chemical process and related industries.

Three floors in Grand Central Palace will be required to stage these displays. They will reflect the results of many years of research, and definitely point the trend in practice for the years ahead.

Visit the Chemical Exposition this year. Learn about the new and improved products—study their operation and possible advantages to you. Discuss your problems with experienced engineers. Here you will acquire knowledge that will help in your business and will enhance your future progress. You and your associates are cordially invited to this great Exposition.

Management, International Exposition Co.

9306

New Equipment

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York, mentioning the number of the item.

610—Electric Heating Element

The Patterson Foundry & Machine Co., East Liverpool, O., has announced a new electric heating element known as the Patterson "Flasheat" element. It is claimed that the element offers a high heat concentration per unit area, rapid water cooling, long life, and immediate replacement without removal of insulating jacket from kettle or other receptacle on which these elements are used.

611—Mixer Use in Tank Cars

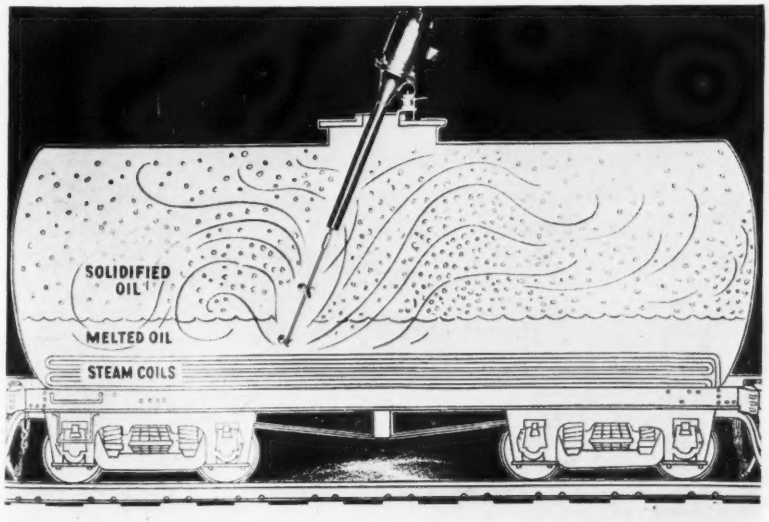
Mixing Equipment Co., Rochester, N. Y., has devised a method for the economical unloading of semi-solid vegetable oils from tank cars. The common method, based on melting the contents of the car with steam coils built into the car, is a procedure whose time varies with the contents and temperature. The method suggested consists of introducing a portable mixer with long extended bearing member through the manhole cover. The mixer is said to circulate the melt next to the steam coils, and by bringing the hot oil into contact with the unmelted layer, to reduce tank contents to a liquid state much more rapidly.

612—Electric Hoist

The Harnischfeger Corp., Milwaukee, is now in production on a P & H Hevi-Hoist. The electric hoist is installed permanently over a small elevator well and is used to lift and lower materials in portable boxes from the basement to all floors. It is said that the P & H hoist is adapted to cases where the volume of business does not warrant a large investment for elevator service. The hoist is equipped with the latest P & H explosion-proof electrical equipment.

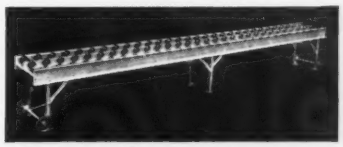
613—Stainless Clad Steel

Jessop Steel Co., Washington, Pa., is manufacturing stainless clad steel sheets and plates, known as Silver-Ply, which are said to combine the corrosion-resistance of stainless steel with many of the desirable properties of mild steel. They are also said to be suitable for cooking vessels, storage tanks, and wherever corrosion or erosion are encountered. The usual sheet or plate of Silver-Ply consists of 20 per cent stainless steel and the balance mild steel.



614—Portable Conveyor

Aluminum Ladder Co., Tarentum, Pa., has just introduced a new roller-type portable aluminum conveyor, featuring high tensile strength combined with light weight.



The model illustrated is equipped with steel ball bearing wheels fitted on an eccentric axle at each end of the conveyor. The new conveyor can be supplied with or without legs, and with or without wheels on the legs.

615—Florasynth Price List

Florasynth Laboratories, New York, have just issued a new wholesale price list of their essential oils, aromatic chemicals, resinoids, perfume oils, etc. Copies are available.

616—Chiris Booklet

Etablissement Antoine Chiris, perfuming materials, Grasse, France, has just issued a handsome illustrated booklet describing the growth of the company from its inception in 1768 up to the present time. It is printed in four different languages. New York offices of Chiris are located at 115 E. 23rd St.

617—Brush Catalog

The Flour City Brush Co., Minneapolis, has just published a new catalog showing a complete line of brushes and miscellaneous supplies for the janitor trade. Copies are available.

618—Thymol And Its Isomers

The July-August issue of the *Givaudanian*, house organ of the Industrial Aromatics Division, Givaudan-Delawanna, Inc., New York, contains an interesting article which reviews important data on the application of thymol and its isomers. Copies of the bulletin are available.

New Patents

Conducted by

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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,164,568, Parasiticidal Compound, Patented July 4, 1939 by Ralph N. Chipman, Plainfield, and Frank J. Seibert, Bound Brook, N. J., assignors to Chipman Chemical Company, Inc., Bound Brook, N. J. The process of producing a parasiticide, which comprises forming a mixture containing Paris green, calcium arsenate, an alkaline-earth hydroxide and water, drying the mixture and, during some portion of the process prior to completion of the drying, subjecting the mixture to a temperature of between approximately 150°F. and approximately 250°F.

No. 2,164,717, Brushless Shaving Cream, Patented July 4, 1939 by Wolf Kritchevsky, Chicago, Ill., assignor to Rit Products Corporation, Chicago, Ill. A non-varnishing brushless shaving cream comprising a plastic emulsion of oleginous and aqueous materials and containing a minor proportion of a phosphatide.

No. 2,165,206, Pest Control, Patented July 11, 1939 by Raymond F. Bacon, Bronxville, N. Y., and Isaac Bencowitz, Gulf, Tex., assignors to Texas Gulf Sulphur Company, Houston, Tex. A parasitical preparation, comprising a sulphide of phosporous as an essential constituent thereof.

No. 2,165,486, Insecticide, Patented July 11, 1939 by Paul W. Jewel and Wm. E. Bradley, Los Angeles, Calif., assignors to Union Oil Company of California, Los Angeles, Calif. A method of producing a transparent insecticide capable of ready emulsification with water, comprising the steps of thoroughly intermixing at ordinary temperatures a mineral spray oil, a higher fatty acid between about 4 per cent and 6 per cent by volume of the insecticide of a sulfonated fatty acid, and an alcohol of the class consisting of butyl alcohols, glycols, monomethyl, ethyl and butyl ethers of mono and di-ethylene glycols and cyclohexanol, adding slowly and with agitation a solution of an emulsifying agent, raising the temperature of the mixture to not exceeding approximately 140°F. during the last addition, cooling the obtained mixture, and finally adding thereto a nicotine compound.

No. 2,165,586, Carpet Cleaning Composition, Patented July 11, 1939 by Clair W. Studer and Roy G. Roshong, North Canton, and Marie Miller, Autlman, Ohio, assignors to The Hoover Company, North Canton, Ohio. A carpet cleaning composition consisting of a mixture of the following ingredients in substantially the following amounts by weight: buckwheat flour 100 pounds, a light petroleum cleaning oil—24 pounds, a water-insoluble soap having a stearic acid base — 2 pounds, salicylic acid — 2 pounds and water—60 pounds.

No. 2,166,127, Shampoo Composition, Patented July 18, 1939 by Frank J. Cahn and Morris B. Katzman, Chicago, Ill. A shampoo composition comprising an aqueous solution of at least 5 per cent of a lower molecular weight sulpho-fatty acid ester of a higher molecular weight alcohol, the hydrogen of the sulphonic group of which is replaced by the radical of an organic nitrogenous base, the lower molecular weight sulpho-fatty acid radical containing less than eight carbon atoms and the higher molecular weight alcohol radical containing at least eight carbon atoms, the shampoo being stable against crystallization on being supercooled.

No. 2,166,246, Calcium Arsenate, Patented July 18, 1939 by Ivan L. Haag, Lakewood, Ohio, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del. In the manufacture of basic calcium arsenate by the addition of arsenic acid to lime slurry with agitation the method for obtaining a basic calcium arsenate having amorphous-like properties and a total water-soluble arsenic content less than 0.75 per cent which comprises maintaining a body of lime slurry in a state of agitation, introducing a further quantity of lime slurry by means of an impeller type pump, and simultaneously introducing arsenic acid into the suction side of the pump, the rate of addition of lime slurry and arsenic acid being so adjusted that the excess of lime initially present in the reaction mixture gradually diminishes to an end-point at which the reaction product contains in the order of 41 per cent arsenic oxide.

No. 2,166,314, Detergents, Patented July 18, 1939 by Wilfred S. Martin, Norwood, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio. The process of improving the sudsing and detergent properties of a water-soluble salt of an alkyl sulfuric acid containing eight to eighteen carbon atoms in the alkyl radical which comprises adjusting the unsulfated aliphatic alcohol content of same to an amount sufficient to improve the properties but not below about 3 parts or in excess of 75 parts unsulfated aliphatic alcohol to 100 parts water-soluble salt, the unsulfated aliphatic alcohol being saturated and being taken from the group consisting of primary saturated aliphatic alcohols containing eight to fourteen carbon atoms in the molecule and secondary aliphatic saturated alcohols containing eight to twenty-five carbon atoms in the molecule.

No. 2,166,315, Detergent, Patented July 18, 1939 by Wilfred S. Martin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio. A spray dried alkyl sulfate detergent of improved sudsing and detergent characteristics comprising as the essential ingredient a mixture of a water-soluble salt of an alkyl sulfuric acid of a normal primary aliphatic alcohol having eight to eighteen carbon atoms in the molecule and an unsulfated saturated higher alcohol taken from the group consisting of saturated normal primary aliphatic alcohols having eight to fourteen carbon atoms in the molecule and secondary saturated aliphatic alcohols containing eight to twenty-five carbon atoms in the molecule, the product being free flowing and substantially completely composed of discrete particles and containing in the range of four to twelve parts unsulfated alcohol to 100 parts the salt.

No. 2,166,500, Parasiticidal Spray Oil Composition, Patented July 18, 1939 by Arthur L. Lyman, Berkeley, Calif., asignor to Standard Oil Company of California, San Francisco, Calif., a corporation of Delaware. A parasiticidal oil consisting substantially entirely of liquid aliphatic mono-olefine hydrocarbons, the olefine hydrocarbons boiling in major part above about 235°F. and below about 600°F. at 3.5 millimeters mercury pressure.

Bleaching Olive Soaps

(*From Page* 25)

and persulfate of sodium are mixed or a commercial persulfate of zinc are used. The mixture is dissolved in about five parts of cold water and by adding one part of caustic soda lye and stirring, a uniform gelatinous mass is formed. In this state it is mixed in the kettle with the soap. Care must be taken that the temperature is not too high, the soap not too open, and the lye well settled in order to avoid wasting of persulfate. Even dark soaps or soapstocks are bleached fairly well.

Often after bleaching, the soap retains a pale green tint, which is very difficult to destroy even by increasing the amount of oxidizing agents. I had to develop a completely different way of removing this pale green or yellow tint (Spanish patent). When we compare the effect of different bleaching agents on olive oil foots, we find that benzoyl peroxide, although producing less active oxygen than a chlorate, and applied in much smaller proportion than the latter, changes the color tone of the oil so that it yields white or ivory colored soaps. I assume that a real bleaching effect does not take place in this operation with benzoyl peroxide. It seems probable that simultaneously with the bleaching, a complementary color to the green tint is produced. I was able to cover the greenish tint of olive foots soaps which were bleached as described above, by adding foots previously treated with large excess of benzoyl peroxide and "burned" to a reddish colored oil. Sometimes in this way, I could get soaps of a good white color. Hence I tried to apply this method generally to treat in each case the remaining tint with the corresponding complementary color.

Complementary colors mixed in the correct proportion yield grey and the final color will depend upon the ratio of black to white. Only, when very diluted, a fairly white color may be obtained. This means that the soap must be bleached pale, so that only an insignificant amount of added color is needed. This fact is important as this process is obviously not bleaching, but "neutralizing" the tint. The soap, therefore, must be well bleached, of course, and as bright as possible before the coloring is added. Using the concentrated standard colors, I applied for this purpose only 1:250,000 and even less. In practice, as the greenish tint is due chiefly to a mixture of chlorophyll and yellow xanthophyll, nearly every soap can be finished satisfactorily by adding mixtures of the two corresponding complementary colors, i. e. red and purple-blue. The advantage of this method lies in the fact that each individual case can be handled according to the depth of its greenish color tone. In practice, this process has proved to be economical and easily executed, and may have value in the bleaching of other kinds of soap.

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Indian Soap Perfumes

Attars of Mehndi and Hina obtained from the Indian henna plant have recently been incorporated in soaps. The attars give a desirable stabilizing effect to the perfume composition and are excellent modifiers, toners and blenders. Marigold flowers yield an essential oil suitable as a blender and toner in lavender and violet soap compounds. Sadgopal. *Soap, Perfumery and Cosmetics* **12,** 329-33, 358 (1939).

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Refining Castor Oil

A volatile solvent such as gasoline insoluble in water but soluble in warm castor oil and having lower specific gravity and viscosity than oil, is dissolved in castor oil in amounts of 25-33 per cent by volume. Free fatty acids are neutralized by adding an aqueous solution of alkali hydroxides or carbonates and treating in a closed bottle with reflux condenser under higher temperatures. The precipitating soap is removed and the oil is washed until the wash water is neutral. The solvent is then distilled off and the oil dried. Lajos Hasko. Hungarian Patent No. 119,434.

Natural Antioxidants

A study was made of the antioxygenic activities and other properties of concentrates prepared from extracted palm-kernel, peanut, soybean, cottonseed, and linseed meals. The yields of the concentrates from the seed meals were of the same order, but their antioxygenic activities differed considerably. Those from palm-kernel and linseed meals were of very low antioxygenic power, those from peanut and soybean meals had pronounced, and that from cottonseed meal exceptionally pronounced antioxygenic activity. The activities of the concentrates bore no apparent relationship to the mean unsaturation of the respective seed fats, nor to the small but definite proportions of organic nitrogen which were always present.

On the other hand, it was evident that an antioxygenic compound of a basic nature was invariably present. The antioxygenic activity was suppressed after treatment of the concentrates with anhydrous hydrogen chloride, and partly restored on subsequent neutralization with sodium methoxide. The identity of the basic component concerned was not determinable, but there is some cause to believe that a basic oxygen, rather than a basic nitrogen, compound may be the factor responsible for retardation of atmospheric oxidation. T. P. Hilditch and S. Paul. *J. Soc. Chem. Ind.* **58,** 21-4 (1939).

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Sulfonated Fatty Products

Highly sulfonated capillary-active fatty substances are prepared by treating a mixture of neutral fats, fatty acids or other fatty materials, low molecular-weight aliphatic or aromatic acid anhydrides or chlorides and low molecular-weight aliphatic or aromatic carboxylic acids, with oleum or its equivalent, and neutralizing the products. As an example, castor oil, acetic anhydride and chloroacetic acid are treated with chlorosulfonic acid and neutralized with sodium hydroxide. Oranienburger chem. Fabrik A.-G. German Patent No. 663,984.

Superfatting

(*From Page 24*)

containing this does not tend to develop a fishy odor on storage.

Most of the soaps on the market named after a specific oil contain this oil in the saponified state, and indeed one would reasonably expect say, "olive oil soap" to contain a fair proportion of this oil. Almond oil soap, avacado soap and others would, of course, contain but a small percentage owing to the higher price of these raw materials. It is nevertheless quite practicable to add small amounts of almost any oil specifically desirable to a good soap base, selling the resultant product as toilet soap superfatted with the oil in question. The above three oils have a definite sales appeal as they are generally held to have a beneficial effect on the skin. Other similar oils such as grape seed, deodorized pea-nut, etc., might well be put across in "vegetable oil" soaps, a term that appears to imply an inexplicable superiority to the ordinary buying public.

Creams containing castor oil have been long considered of value as emollients. This is particularly true with baby creams, and as a companion product to the latter a baby soap containing castor oil is a possibility. Large amounts of this oil can be incorporated in soap without depressing the lathering power noticeably, and, providing a good deodorized pharmaceutical grade is chosen, it shows no tendency to develop an odor in the tablet. The slight residual odor of the finest qualities is very easily masked by the perfume, and the proportions that can be safely included (3-4%) produce a softness that is only equalled by lanolin.

Spermaceti

THE head oil of the sperm whale contains a liquid wax from which a solid constituent, spermaceti, may be isolated. This solid wax has long been held of benefit to the skin as an ingredient in creams, and it is also a practicable addition to the list of superfatting agents. Consisting almost entirely of cetyl palmitate, it naturally does not exhibit the hydrophilic properties of the alcohol. Nevertheless, it is worth incorporating in soap if only for the name. The reputation for rancidity that this substance has is due to the past use of insufficiently pure grades, and it is now possible to obtain perfectly white, lustrous samples with only the faintest odor. These samples will usually be found to possess great stability. The addition of spermaceti does not actually result in any marked improvement in the texture of the soap or of its lather, but its reputation may be worth exploiting.

More recently, a companion product to spermaceti, produced by partial hydrogenation of the liquid portion of sperm oil, has been placed on the market. This is sold under the trade names, Cetiol, and appears as a liquid which remains clear to about 10° C. It is claimed that the hydrogenation yields a product which is as readily absorbed into the skin as ordinary liquid sperm oil, but which is practically odorless and free from any danger of rancidity. This last claim seems to be borne out in practice, and Cetiol is definitely a successful substitute for any liquid vegetable oil incorporated as a superfatting agent in soap, and as such produces a similar improvement in the texture of the lather, and the glossiness of the soap tablet.

Mineral Oils

THE improvement in the softness of the lather produced by adding mineral oil or petroleum jelly to soap scarcely justifies such addition, especially as an injudicious amount decrease its abundance. These substances do, however, impart a much greater glossiness of surface to the finished tablet than do vegetable or animal oils and it is suggested that up to ½% be incorporated for this effect. Petroleum jelly especially is of value. Soap flakes, in which glossiness is a great sales factor, will benefit by the addition of a good white grade of jelly, although such a procedure will not compensate for lack of attention to the all important point of adjusting the roll temperature.

Sulfonated Oils

ON CONCLUDING this survey of the modern approach to the superfatting process, it would be as well to mention yet another additive whose presence in soaps causes a marked improvement in the properties. This additive is sulfonated olive or castor oil, and a further possibility is triethanolamine lauryl sulfate. All three are thick velvety liquids, water soluble and of considarble detergent power, and, although their presence in small proportions probably does not increase the detergency of soap noticeably, they do confer to a marked degree the smoothness of lather characteristic of lanolin. One of the most pleasant soaps the writer has examined contained 2% of sulfonated oil and ½% lanolin. The difference between this soap and a tablet made from the same base, but without any additives was quite surprising.

Sulfonated oils are well known as perfume solvents, and consequently are again of great value in distributing the essential oils through the soap mass. Some varieties of oil are marketed in an acid condition. These are obviously unsuited for use in soap, and care must be taken to obtain neutral grades.

Emulsion Fat Treatment

In manufacturing oils, fats or industrial greases from heated emulsions of oils or fats, when the emulsion is atomized in a jet into a cooling chamber containing a cooling gas and the solidified or partly solidified particles obtained are collected from the chamber for subsequent treatment, the cooling gas is air that has been passed through a filter to remove impurities and which has been dehumidified. The air is supplied in a jet concentric with the jet of heated emulsion. Other gases such as oxygen, hydrogen, carbon dioxide, ozonized air, etc., may be supplied to the chamber, if desired, with the jet of cooling air. John L. Kerr.

Sanitary Products SECTION

A Section of "SOAP" dealing with

Insecticides • Disinfectants • Moth Products
Floor Products • Polishes • Chemical Specialties

PYRIN IS SAFE!

When your insecticide leaves your factory you've got to be **sure** it is **safe** in human hands. If it is made with PYRIN, you **are** sure.

Fly sprays can get on food, clothing, skin —even into your lungs! So they **must** be harmless. PYRIN, even in concentrated form, has been thoroughly tested toxicologically. No nausea and no headaches. No irritated eyes or skin rashes. No distress when inhaled. And, most important, no cumulative toxic or odor effects.

That's what we mean by safety!

Another advantage in using PYRIN is its economy. It actually costs you **less** to make a **better** product these days. Just compare the cost. Investigate PYRIN at once.

Killing Power—That's The Thing!

JOHN POWELL & CO., Inc.

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SWEEP....

because when they're down . . . *they're OUT!*

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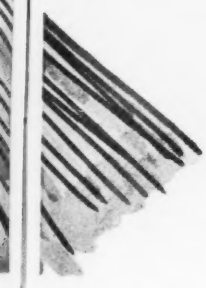

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Sanitary Products

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

A STRONG case against formula disclosure on a package label is presented in a recent communication from the head of a well-known Portland, Oregon, insecticide firm. Among his remarks, published elsewhere in this issue, he cites the case of a large wheat grower who purchased copper carbonate of almost 100 per cent purity, and who protested because the active ingredient expressed as metallic copper was only 55 per cent. The buyer had the idea that the other 45 per cent was just filler, and in his ignorance of the chemical make-up of the product, felt certain he was being gypped.

Obviously, this buyer did not understand even as simple a label designation as that mentioned. What would he secure in the way of understandable information from a more complicated formula statement? What would he think if he read on a fly-spray label, for example, ". . . 1 per cent pyrethrum extractives, 99 per cent refined kerosene" . . . ? Again not understanding the significance of the statement, he would probably raise his voice even higher in his cry of protest.

Formula disclosure to a generally uninformed public is not only futile as far as the protection of that public is concerned, it is dangerous. That it is liable to cause unjustly a vicious kick-back against certain products or classes of products is obvious. We hold no candle for the fake or adulterated product. It is the worst competitor of reputable products. But we cannot see that formula disclosure willy-nilly solves the problem. In numerous instances the greatest beneficiaries of formula statements on labels are pirating competitors.

WARNINGS covering the use of insect sprays, particularly comment recommending poison labels for fly sprays and wearing of "protective clothing" during their use were included in an article in "Public Health Reports" of the U. S. Public Health Service for August 4th. This report covering chiefly dermatitis stated to be caused by alpha naphthyl isothiocyanate, goes on to conclude that most ordinary fly sprays are toxic and irritating to the skin, and "in sufficient concentration are capable of producing death."

Outside of the conclusions based evidently on the authors' own investigations, the statements of this report are quite vague and indefinite, and easily interpreted to damn every household insecticide on the market. That the authors can have little truly representative evidence to support their broad statements, is obvious. Only scattered superficial evidence exists. And based on such, a tax-supported agency of the Government would condemn the products of a whole industry without further ado,—in spite of the fact that the great majority of practical observations over the past fifteen years disprove their contentions.

METAL POLISHES

By Dr. C. A. Tyler

ALTHOUGH the market for metal polishes is gradually declining because of the increasing use of chromium finish, stainless steel and Monel metal, it is still important. In the past when the field for such polishes was more flourishing than at present, hundreds of products of indifferent quality and of poor or even harmful nature were sold. Today with keener competition, the manufacturer has to be more certain of proper formulation and satisfactory results.

Polishes for metals are so extremely simple in composition that it would seem as though anyone could set up shop to make them. But with even so simple a product, some knowledge of the why and wherefore of the ingredients is essential. The basic ingredients are really only two, a liquid carrier and an abrasive. Sometimes a chemical cleaner is added. A metal polish serves two important functions, to clean and to polish,—and these are not the same. A metal surface can be thoroughly clean without having a high luster.

In order to obtain luster it is necessary that the surface of the metal be lightly scratched and for this the right kind of abrasive is required. These scratches are so minute that they are not visible to the naked eye, but they do show up microscopically as fine parallel striations when a metal surface has a satisfactory polish. The result is that irregularities in the surface are smoothed out so that the reflection of light becomes great. Electron diffraction studies indicate that an amorphous surface film of the metal is formed in place of the usual crystalline structure. It is important that the abrasive be so chosen that it will give the effect described. If too hard it will make visible scratches which injure the surface of the metal, and if too soft it will not have any effect on the surface, will not polish.

Practical considerations are that the polish require a minimum of time and effort to give a good result. Also it should be economical in use. By this is meant that a little polish should go a long way. Some of the older polishes gave a good effect if enough hard labor were expended in applying them. However, it has been found that by different formulation good results can be obtained with a lot less effort. Although it is possible that polish for metals be sold in powder, liquid or paste form, the standard forms are somewhat limited by custom. Ordinary metal polish is usually prepared in liquid form although occasionally one finds a powder sold consisting mainly of abrasive. The latter is applied with a damp cloth so that a little water acts as the carrier. The powder is probably more wasteful in use than a liquid. Paste polish is sold mostly for polishing metals at an elevated temperature, when the liquid form is less efficient. Unlike general metal polish, silver polish is often sold in paste form as a matter of custom, one reason being that it is difficult to keep in suspension the amount of abrasive used, as the soft abrasive suitable for silver polish is very bulky.

Individual metals differ a great deal in physical properties such as hardness, which is the most important factor from a practical point of view in studying polishes. Some of the more common metals are listed here in decreasing order of hardness according to Moh's scale, on which 10 represents maximum hardness:

Metal or Alloy	*Hardness Value*
Chromium	9.0
Nickel	4+
Brass	3+
Bronze	3+
Copper	3.0
Aluminum	3—
Gold	3—
Silver	2+

Chromium is exceedingly hard and silver very soft. In other words, chromium does not scratch easily while silver does. Nickel is relatively hard. Brass, bronze and copper are very closely related in this property, while aluminum is about as soft as gold. This scale shows the importance of choosing the proper abrasive. What is designated in the trade as metal polish is intended for use on brass but serves equally well for bronze and copper. It was also used for nickel when nickel plate was common, although a well compounded brass polish would be expected to be less efficient on nickel. A strong trend during the past several years has been to replace nickel-plated ware and trims with chromium-plated materials so that the polishing of nickel will probably require little consideration in the future.

Chromium Polish

CHROMIUM requires no polishing because it does not tarnish. This has nothing to do with the fact that it is an exceptionally hard metal but is due to its slowness to react chemically to form compounds on exposure to the atmosphere. Gold is non-tarnishing but at the same time is a soft metal. Like other exposed surfaces, chromium

Heetfield-Tillotw Photo

plate will accumulate a certain amount of dirt, as when used for automobile trim. It therefore has to be cleaned but not polished. A number of cleaning products on the market are recommended particularly for chromium. A white liquid sold as a chromium cleaner has approximately the following composition:

	Per Cent
Amorphous silica	5
Bentonite	1
Orthodichlorobenzene	10
Triethanolamine oleate	3
Excess oleic acid	0.5
Water	80

The abrasive, silica, will have no effect in polishing chromium. It will help remove solid soil by abrasion. The colloidal clay or bentonite present is there simply as a dispersing agent, and is not classed as an abrasive. Bentonite has strong adsorptive properties which make it a good suspending agent so that the silica will not settle and form a cake at the bottom of the container. Orthodichlorobenzene was at one time recommended for its ability to dissolve metallic oxides. Its efficiency in this respect is low and fails to justify its use. Soap, particularly the one used here, will have good detergent action and will aid in keeping the solid particles in suspension. The excess oleic acid is probably intended to leave a light oily film on the metal.

Another chromium cleaner contains a much higher proportion of orthodichlorobenzene:

	Per Cent
Bentonite	5
Stearic acid	5
Orthodichlorobenzene	40
Water	50

Inclusion of orthodichlorobenzene is particularly futile in a chromium cleaner from the point of view of removing tarnish, since the soil present does not contain metallic oxides.

A powder for removing rust spots from chromium and nickel is rubbed on with a damp cloth, then polished with a clean cloth. This product consists of about 90 per cent of silica and 10 per cent of oxalic acid. The silica would help remove loosely adherent particles of rust while the oxalic acid in solution is a well-known solvent for iron rust. This might be applicable for use on nickel plate, whose great defect is the formation of rust spots through pinholes in the plate, but less applicable to chromium except for the removal of solid dirt.

A rather different product for cleaning chromium contains the following:

	Per Cent
Mineral oil	13
Pine oil	3
Ammonium oleate soap	2
Ammonium oxalate	3
Tripoli	25
Excess ammonia	0.5
Water	54

The mineral oil is to dissolve grease, the pine oil for odor, the

tripoli as abrasive to remove solid soil, the ammonium soap serves as detergent and suspending agent for the abrasive, the ammonia would attack saponifiable grease and ammonium oxalate might help stabilize the suspension but is more probably a carry-over from the old brass-polish formulas. When a sufficiently light mineral oil is used this approaches a mixture of naphtha and water-base polish. This should be a good cleaner for very soiled chromium trim on automobiles. To remove light soil a moist cloth on which a few drops of kerosene have been poured should serve about as well. For household chromium-plated ware cleaning can be done easily with a little soap and water.

Brass Polish

AS A term, metal polish is practically synomymous with brass polish. Brass, bronze and copper corrode by forming oxides and other compounds on the surface of the metal. This corrosion needs to be removed by friction or by chemical attack, preferably both. The corroded surface also accumulates dirt so that cleaning is required. This was no doubt the basis for the naphtha-type polishes which were the first metal polishes developed, the naphtha dissolving away any greasy film present. Later, water-base polishes came into use but these also contain a cleaning agent.

Hard abrasives have no doubt been used but have no place in brass polish. By hard abrasives are meant those like quartz, with a rating of 7.0 on Moh's scale of hardness; or feldspar, with a rating of 6-6.5; or pumice, with a rating of about 6. These are all so hard that they would scratch brass visibly rather than polish it. Amorphous silica is the abrasive most used in brass polish. Various grades are sold. A commercial grade which has been found satisfactory in good-quality polish is a wet-ground grade in which 99 per cent passes through a 325-mesh sieve. The fineness can be based to some extent on the viscosity of the liquid, a heavy-bodied or more viscous liquid having a certain degree of "buffering" action so that larger particles may be present. The tendency is toward producing as thin a liquid as possible. The thinner the liquid, the less drag there is over the surface of the metal and the less work required in rubbing up. For a thin liquid a fineness of 325-mesh is desirable. A greater degree of fineness only increases the cost of the abrasive with no compensating added advantage and with less efficient polishing.

Air-floated tripoli is chemically similar to silica, consisting also of silicon dioxide, but is usually softer than amorphous silica. It has been used in brass polish, but to a much less extent than amorphous silica since the cost of the former is greater and also tripoli breaks down into smaller particles in use, while silica keeps the same particle size.

Rottenstone consists largely of silicon dioxide but contains some undecomposed aluminum silicate. The original aluminum silicate is largely disintegrated in the ground by leaching out of the alumina by water. It is seldom used in brass polish and is even more expensive than air-floated tripoli. Soft abrasives such as those suitable for silver polish will not give a good polishing effect on brass. Abrasives other than silica are only described here because some writers list them as suitable for incorporation in brass polish. It may be useful to have the facts as we see them.

Powder Type Polishes

THE powders sold as metal polish may consist of a simple abrasive, single or mixed, or may contain some additional ingredients. One such powder contains approximately 25 per cent of diatomaceous earth, 55 per cent of 325-mesh silica, 12 per cent of precipitated chalk, 16 per cent of tallow soap and 2 per cent of ammonium oxalate. Diatomaceous earth is a soft abrasive used almost exclusively in silver polish. It is too soft to have the desired effect on brass,—at the same time when mixed with silica, the latter is too hard to use on silver. Admixing of diatomaceous earth for use on brass is only wasteful.

Precipitated chalk is artificially prepared calcium carbonate. It is very fine and is classed as a soft abrasive, too soft to be efficient on brass. Soap used on a wet cloth would exert its usual detergent effect to the extent in which it dissolves. Ammonia and ammonium salts are used to bring about chemical attack on the corrosion itself, as they dissolve copper and nickel oxides and hydroxides. Brass is an alloy of copper and zinc, bronze essentially an alloy of copper and tin. Tarnish on brass and copper is therefore attacked by ammonia due to chemical action. Certain ammonium salts are even more effective in this respect than ammonia.

Another powder polish contains about 10 per cent of soda soap, 15 per cent of soda ash, and the rest silica. These powders are rubbed over the tarnished surface by means of a moist cloth until the desired effect is obtained, then rubbed clean with a fresh cloth. Another powder contains about 4 per cent of oxalic acid mixed amorphous silica. Oxalic acid has a cleaning effect as it attacks brass and copper by chemical reaction.

(To be concluded)

Automobile Polishes

A few formulas in which soap serves as emulsifier for liquid automobile polishes are:

	Per Cent
1. Wax	25
Stearic acid	2.5
Potassium carbonate	2.5
Turpentine	20.0
Water	50.0

	Per Cent
2. Wax	20.0
Stearic acid	2.5
Ammonia (sp. gr. 0.880)	2.0
Triethanolamine	1.5
Turpentine	24.0
Water	50.0

	Per Cent
3. Montan wax, bleached	7.0
Potash soap	3.0
Potassium carbonate	0.8
Water-soluble dye	2.0
Water	87.2

A formula without water is:

	Per Cent
Flake orange shellac	14.0
Denatured alcohol	60.0
Carnauba wax	2.0
Paraffin wax, m. 50-55°	1.0
Turpentine	23.0

Industrial Chemist **15,** 300 (1939).

Tests On Crawling Insects

Tentative methods for evaluating liquid household insecticides against the German cockroach and the bedbug[1]

By E. N. Woodbury and C. S. Barnhart
Ohio State University

IN AUGUST, 1938, the senior author published in *Soap* a report of results obtained during the first year of his tenure of a Fellowship sponsored by the National Association of Insecticide and Disinfectant Manufacturers for developing methods of testing oil-base insecticides against crawling insects. Methods of rearing and use of German cockroaches for testing purposes and results of tests were described in that paper. During the second and final year of this Fellowship similar investigations were made on the bedbug and improvements were made in methods of handling the German cockroach. As the present paper is a final report of the project on crawling insects, it seems desirable to write it in the form of tentative directions for the rearing and use of the German cockroach and the bedbug as test insects for evaluating liquid household insecticides, using all our present knowledge and experience in our recommendations.

Cockroach Test Method

The cockroach test method provides for the uniform application of a mist settling upon random samples of young (second instar) German cockroaches.

Equipment

A. *Rearing Room.* The specifications for this room are identical with those set forth in the current Official Peet-Grady method for a housefly rearing room.

B. *Testing Room.* This room should be separate from the rearing room but it should have the same temperature and relative humidity. Provision must be made for removing mist from the testing room between tests. A Peet-Grady chamber can be used as a testing room, and the mist freed after each test can be removed by the usual ventilating equipment of the chamber.

C. *Testing Equipment.* The following equipment forms one unit by which test insects can be exposed to a settling mist. To increase rate of testing several units may be set up, stationary or on a turntable.

1. A cylinder into which the insecticide is sprayed and in which mist settles upon the test insects. A diameter of 6 to 8 inches and a height of not less than 17 inches is recommended. The cylinder may be made of glass, metal, celluloid or any other firm material unaffected by kerosene.

2. An atomizer that will break up kerosene into a fine mist, spraying it vertically down into the cylinder. A DeVilbiss Numograph artists' air brush, type AEN-601 is recommended.

3. A top for the cylinder upon which the atomizer is mounted to spray through a central hole into the cylinder.

4. A base for the cylinder containing a recess in which is placed the cage of test insects and over which the cylinder may be accurately centered.

5. A celluloid or metal slide placed at the base of the cylinder for protecting the test insects while the cylinder is being filled with mist.

6. Small cylindrical containers (test cages), bottom covered with filter paper, walls greased, and top open. In these containers test insects are placed for exposure to the settling mist. As there must be no crack between the filter paper and the container into which roaches can crawl, the following assembled container answers the purpose. Bottom: Octagonal window glass plate covered

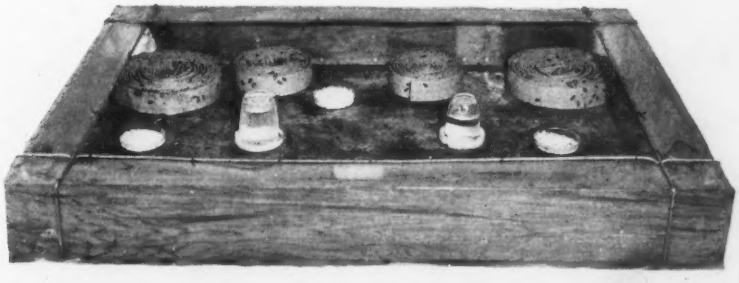

Figure 1. Cockroach stock cage, showing coiled corrugated cardboard shelters.

[1] A cooperative project between the National Association of Insecticide and Disinfectant Manufacturers and the Ohio State University Research Foundation. This project was under the immediate supervision of Dr. F. L. Campbell, acting in consultation with the Insecticide Scientific Committee of the Association. A condensed version of this paper was presented by F. L. Campbell before the 25th annual summer meeting of the N.A.I.D.M., New York City, June 5, 1939.

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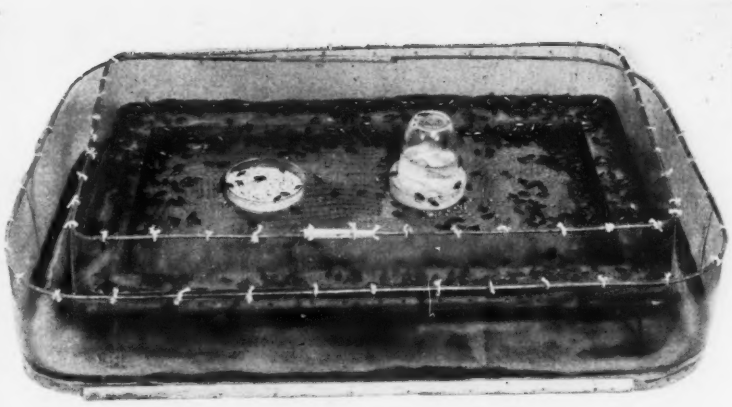

Figure 2. Cage for obtaining newly hatched cockroaches daily.

with a layer of flannel, a layer of rubber dam and a circle of filter paper. Walls: A collar of celluloid, 1¼ inches high, inserted in a 4-inch metal embroidery hoop. The hoop forming the bottom of the collar is fastened to the glass bottom by two metal clips, making crack-free contact with the resilient, smooth surface over the glass. The container is easily taken apart for removal of the treated test insects from the filter paper.

An easily constructed and inexpensive testing unit of the above type has been described in detail and figured by the senior author (Woodbury, 1938).

D. *Rearing Equipment.* For obtaining cockroaches of known age and uniform development three types of cages are necessary.

1. Stock cage: Any escape-proof but accessible enclosure in which roaches can live naturally is satisfactory. We recommend a large wooden box with low walls lined with greased celluloid and open at the top (see Woodbury, 1938). Coils of corrugated cardboard (codling moth bands) now used for shelters for the roaches are shown in the stock cage in Figure 1.

2. Hatching cage: This is a double cage (Figure 2) for automatically segregating newly hatched nymphs. The inner cage is 15 x 24 inches and the outer cage 18 x 28 inches. Both have greased celluloid walls 5 inches high. The bottom of the inner cage consists of 16 mesh wire screen stretched upon a wooden framework. The screen of the inner cage rests upon three coils of codling moth band (4 inches diam.) placed upon the solid floor of the outer cage. The under surface of the wooden framework of the inner cage is covered with greased celluloid. (See "Procedure, rearing" for the operation of this cage.)

3. Rearing cage: The newly hatched nymphs are reared in one-half gallon glass utility jars (similar to battery jars) until ready for use. Food is placed loose on the bottom of the jar, and water is provided in a 22 x 65 mm. shell vial plugged with cellucotton and placed on its side on the bottom of the jar.

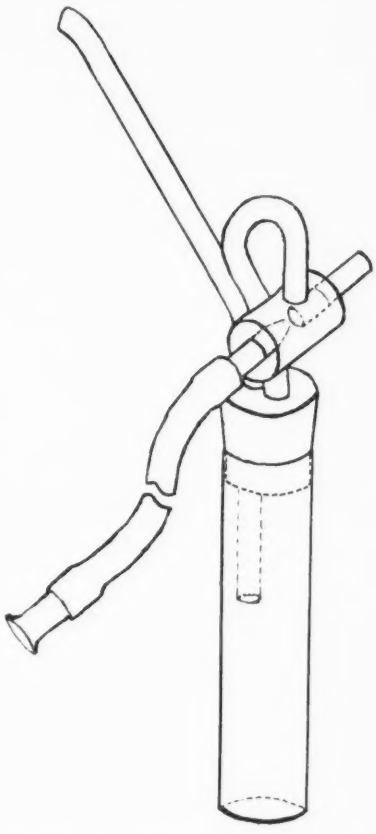

Figure 3. Blower aspirator for picking up cockroaches and bed-bug eggs.

Maximum availability of water for the roaches and retention in the vial may be attained by preparation of plugs from cellulose wadding which can be obtained in the form of pads 1 foot square. Each pad consists of about 30 thin layers of the cellulose material. For preparing plugs two layers are stripped from the pad and rolled upon a glass tube in the direction in which the layers stretch. The layers when rolled up make a cylinder about ¾" in diameter. The glass tube is withdrawn from the cylinder and it is cut with scissors into plugs ⅝" long. These plugs should fit snugly into the ends of the vials mentioned above and should be inserted into a vial full of water so that no air space is left between the plug and the water. The water will not run out when the vial is placed on its side and as the water evaporates or is used by the roaches, the plug, if it fits properly, will move along the vial with the receding water, until it reaches the bottom of the vial. The state of water supply can easily be seen by observing the position of the plugs in the vials.

Escape of the young roaches from the jars is prevented by smearing the inside of the jar near the top with a thin band of vaseline-mineral oil mixture. As an additional precaution, the jars should also be covered with cheesecloth.

E. *Food.* The following standard diet (McCay and Melampy, 1937) is recommended:

	Parts by weight
Ground whole wheat.....	50
Dried skim milk powder..	45
Bakers' yeast (dry).....	5

Before use it is necessary to moisten the mixture with water until it forms a crumbly mass and then allow it to dry.

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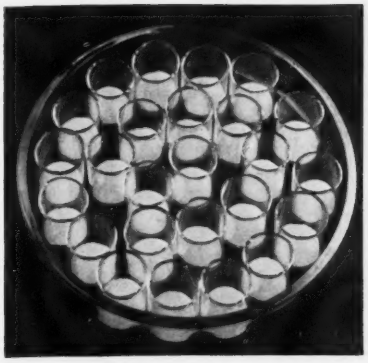


Figure 4. Test cage for exposing isolated bedbugs to a settling mist.

F. *Aspirator.* If roaches are not to be immobilized by chilling in order to handle them, some device for picking up the active insects without injury is necessary. The usual suction type insect aspirator is satisfactory when attached to a vacuum line. However, we recommend a blower type of aspirator[2] operated by mouth. The aspirator used for picking up young roaches is illustrated in Figure 3. The size of the aspirator can be judged by the dimensions of the vial, 24 x 85 mm. Air blown into the mouth piece passes along the rubber tube into the barrel above the stopper of the vial. Within the barrel, shown by dotted lines, is a nozzle directed toward the mouth of an open tube. The flow of air through the nozzle reduces pressure in the barrel just as pressure is reduced in a filter pump by flow of water through a constriction in a tube. The reduction of pressure within the barrel draws air into the collecting tube strongly enough to suck into the vial insects at the end of the tube. The looped metal tube from the barrel to the stopper prevents saliva from entering the vial. The aspirator is best operated by strong puffs of air from the mouth. Its advantage over a mouth suction aspirator is, of course, elimination of the danger of sucking dust into the lungs.

A larger blower aspirator may be used to pick up adult roaches.

G. *Test Insect.* Second instar nymphs should be used as test insects two days after molting (12-14 days after hatching).

H. *Reference Insecticide.* The current Official Test Insecticide of the N.A.I.D.M. is recommended.

Procedure

A. *Rearing.* The stock cages require very little attention. Infrequent renewal of food and water, cleaning of the cages and regreasing of the celluloid lining of the cages constitute all the care necessary.

Female roaches bearing egg capsules are transferred from the stock cages to the hatching cages when needed. This is done by knocking roaches from the coiled band shelters into a large greased crystallizing dish placed in the stock cage. The roaches in the dish are immobilized by chilling at 32° F. for 15 minutes and the desired adult females are sorted out and placed in the hatching cage. The hatching cage should always contain about 1000 egg bearing females in order to provide about 1000 young roaches per day.

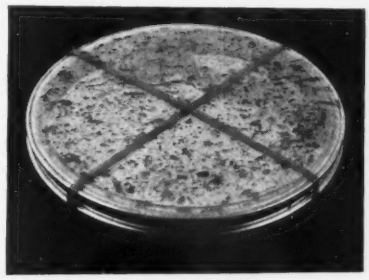


Figure 5. Bedbug rearing cage.

Newly hatched roaches seeking shelter crawl through the meshes of the screen of the inner hatching cage and almost all of them enter the corrugations of the coils of codling moth bands upon which the screen rests. Every day the inner cage is lifted off the coils and each coil containing roaches not more than 24 hours old is placed in a dated utility jar with food and water. Any young roaches that did not enter the bands are picked up by the blower aspirator and placed in the jars. Females that have dropped their egg capsules are picked up and returned to a stock cage.

B. *Testing.* Twelve to fourteen days after the newly hatched roaches were placed in the utility jars, they are ready for use in tests. Roaches of the proper age are tapped out of the bands into a large greased crystallizing dish. About 20 lots of approximately 50 roaches each are then picked up from the dish with the blower aspirator and placed in test cages, one lot to a cage. These cages are taken at random for the tests.

Before starting a series of tests the atomizer is checked for performance by timing the delivery of 1 cc. of O.T.I. from a graduated pipette attached horizontally to the inlet tube of the atomizer. This quantity should be delivered in 9 seconds at a spraying pressure of 20 pounds per sq. in.

After ventilation, a test cage of roaches is placed in the recess of the base of the settling tower and is

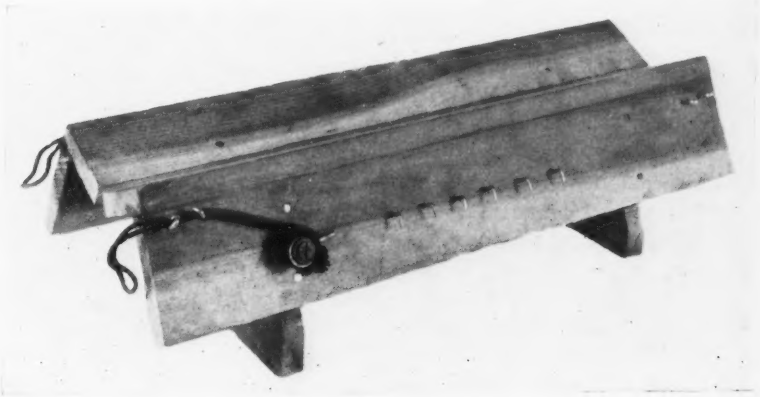
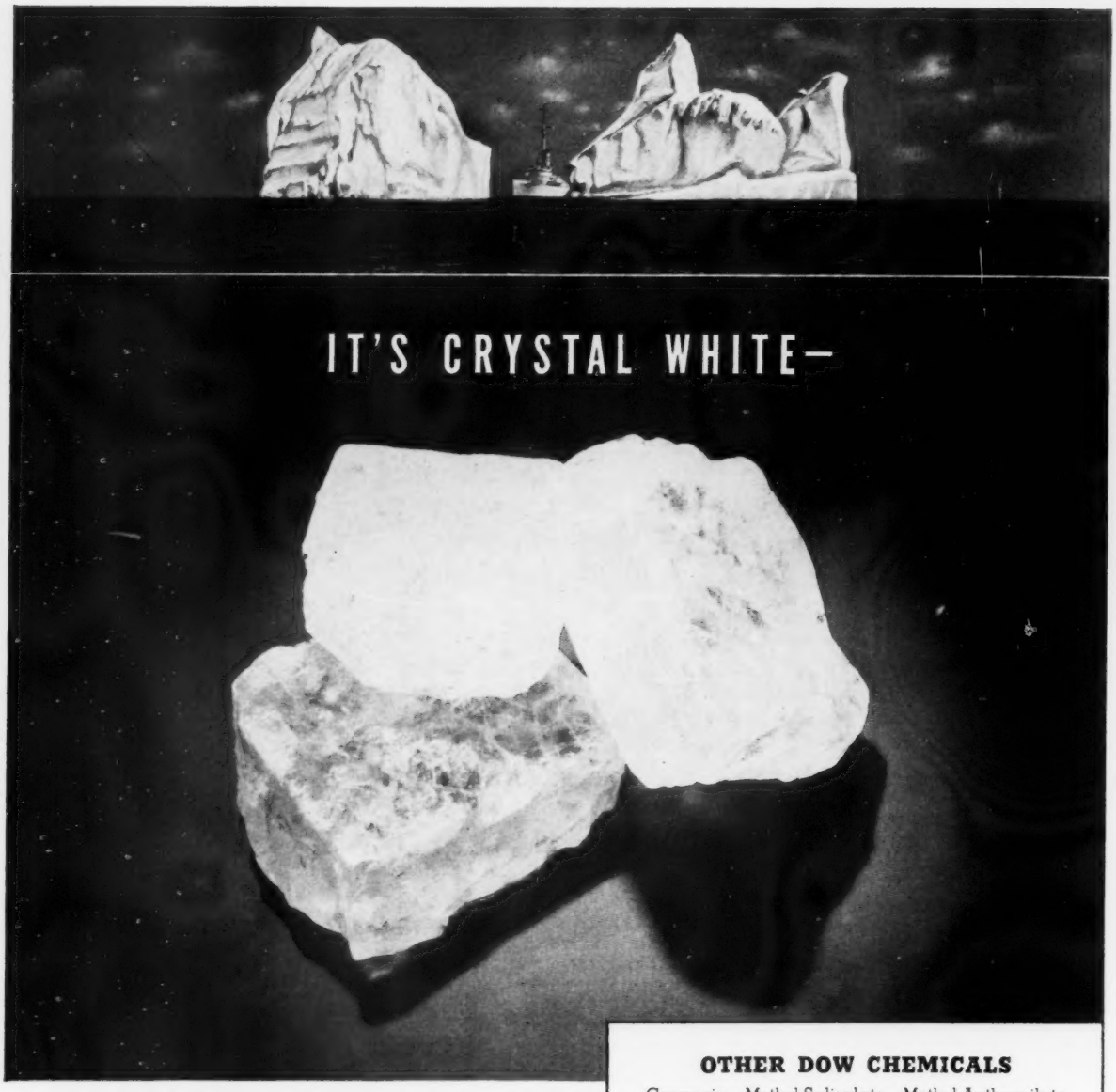


Figure 6. Rabbit holder.



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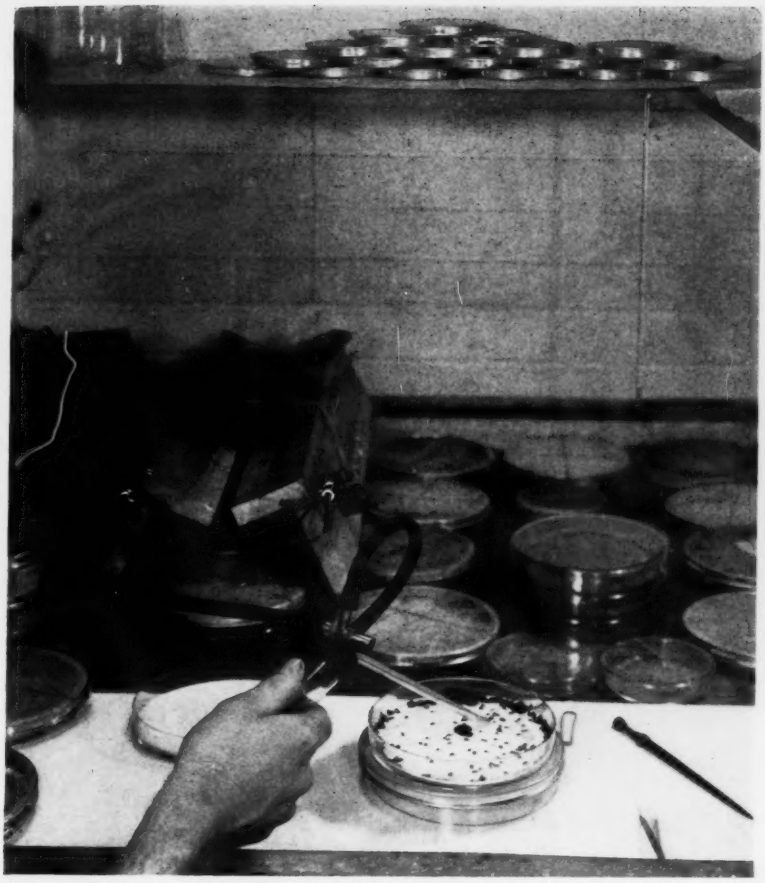


Figure 7. Blower aspirator and other equipment used for rearing bedbugs on rearing table.

covered by a celluloid slide. The spray cylinder with top is placed upon the slide and centered over the cage. The cup of the atomizer is filled with the liquid to be tested and it is sprayed into the cylinder for 30 seconds. After spraying, 20 seconds are allowed for the air currents to subside and the slide is then pulled out and the insects in the test cage are exposed to the settling mist for 25 seconds. This is the timing required to give a kill of about 50 per cent of the standard test insects with the O.T.I. The quantity of O.T.I. so deposited on the bottom of a test cage averages 0.41 mg. per sq. cm. with a standard error of ±0.024 mg. per sq. cm.

At the end of the exposure period the test cage is removed from the recess and set aside for a few minutes, while preparations are made for the next test. The test cage is then taken apart and the paralyzed roaches on the filter paper are carefully tapped upon a circle of cheesecloth held taut in a 7-inch embroidery hoop laid upon a table. The roaches on the cheesecloth are covered with a 6-inch half Petri dish and left undisturbed overnight without food or water. About 24 hours after the spray application mortality counts are made without disturbing the roaches. Insects that walk upon the cheesecloth are called alive; those that do not walk, whether dead or not, are called dead, because observations have shown that roaches incapable of locomotion will soon die. Moribund and dead roaches are usually found upon their backs. The cheesecloth circle is quartered with pencil lines to facilitate counting.

Conditions for Evaluation

The conditions for official evaluation of fly sprays by the small group Peet-Grady method (*Soap Blue Book*, 1939) is recommended for evaluation of liquid household insecticides by the foregoing cockroach test method. An example of an evaluation carried out on cockroaches is given in Table 1.

Discussion

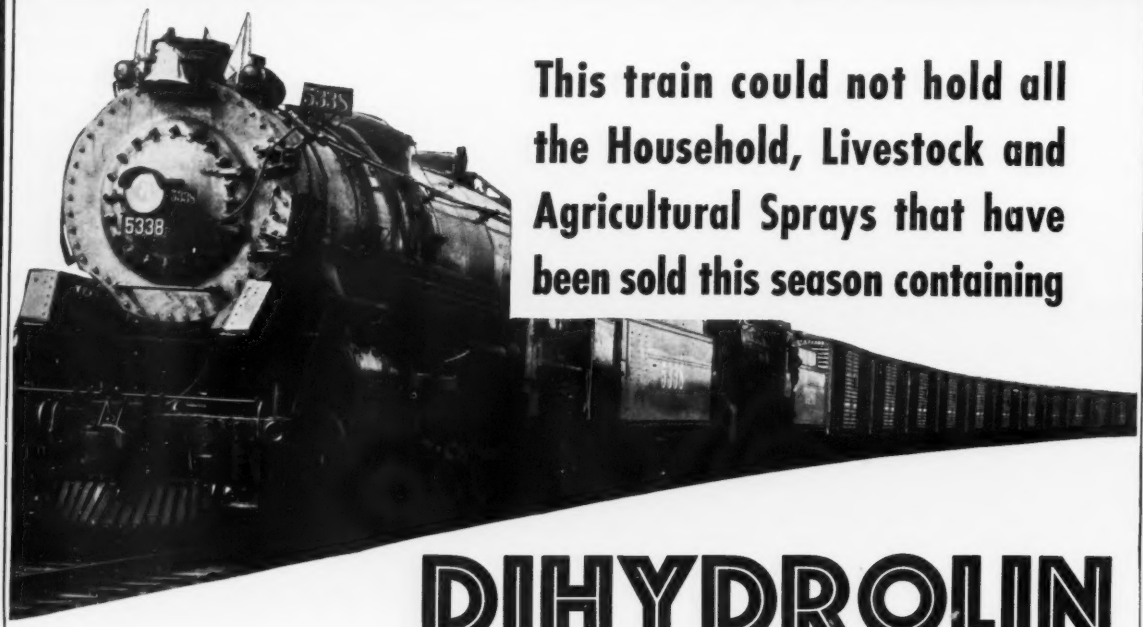
The foregoing method against cockroaches is similar to the Peet-Grady method in purpose and reliability. It will measure the relative effectiveness of different ingredients of cockroach sprays by eliminating the application factor, which is held constant. It will not indicate whether a given insecticide will control roaches in practice, because control depends not only on the insecticide but on spraying pressure, atomization, thoroughness of application, quantity applied, and structural factors; in other words, on the operator, the machine and site of infestation. However, it is fair to assume, other things

Table 1. An evaluation of an unknown pyrethrum insecticide vs. the O.T.I. against the second instar German cockroach.*

Pair	*Date* 1939	*Unknown* No. 2 *Per cent kill*	*O. T. I. Per cent kill*	*Difference*	*Deviation from mean difference*	*Deviation squared*
1	6/19	64	44	+20	+0.4	0.16
2	6/19	62	47	+25	+5.4	29.16
3	6/19	71	57	+14	—5.6	31.36
4	6/22	67	43	+24	+4.4	19.36
5	6/23	78	64	+14	—5.6	31.36
6	6/23	80	63	+17	—2.6	6.76
7	6/23	73	52	+21	+1.4	1.96
8	6/23	80	58	+22	+2.4	5.76
9	6/26	73	48	+27	+7.4	54.76
10	6/26	59	38	+21	+1.4	1.96
		70.8 M	51.2 M	+19.6 M.D.		182.60 sum d^2

Mean difference equals +19.6; standard error of mean difference equals 1.4.

* Each test recorded in the table was made in duplicate, about 50 insects for each treatment. Total number of insects used was 1,049 for the unknown and 1,044 for the O.T.I. (Official Test Insecticide.)



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1 Kearns, C. W. and Flint, W. P. Jour. Econ. Ent. 1937. 30, 158
2 Kearns, C. W. and Compton, C. C. Jour. Econ. Ent. 1938. 31, 625

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being equal, that the spray giving best results by the foregoing laboratory method will give the best results in practice. The same assumption is made tacitly in interpreting the results of tests by the Peet-Grady method.

It was shown by Woodbury (1938) that the adult female of the German cockroach is more resistant to liquid household insecticides than any other active stage of this insect. The eggs in capsules, however, are the most resistant of all stages. The question may therefore be raised as to why we did not choose females bearing egg capsules as our standard test insect? We would have done so if it were practical to get large numbers of egg-bearing females that would be as uniform in susceptibility as young nymphs. It is not feasible, however, to rear adult females in the numbers needed. The numbers of rearing jars would have to be quadrupled over those needed for young nymphs because each jar would be tied up during the whole period of development of the insect, two months or more. It would be necessary to add the labor of separating the sexes and to select for the tests only the egg-bearing females, the smaller part of the population. Moreover, adult females would be found more variable in susceptibility than young nymphs because, during their long period of development, divergence in individual characteristics occurs and adults of the same actual age may vary greatly in physiological age and hence in susceptibility.

Although it is not feasible to use egg-bearing females in a routine test method comparable to the Peet-Grady method, it is possible to use them for special investigations where it is desired to subject an insecticide to a severe test of performance in order to determine the deposit needed to kill both females and their eggs.

When an unknown and the Official Test Insecticide (O.T.I.) are tested against young nymphs the results are intended to be of relative value only. The assumption is made that if insecticide A is better than B against young nymphs, it would be better than B against adults, and in the same ratio. We have as yet no data to support this idea, but since cockroaches undergo little metamorphosis during development, the assumption seems reasonable.

Since we have persuaded ourselves that young nymphs should be used as the standard cockroach test insect, why not use newly hatched nymphs and eliminate the rearing jars altogether? We have no experimental evidence to show that this would not be the best procedure. We have simply reasoned that a certain short period of development should be desirable to eliminate defective individuals. Therefore we decided to carry the nymphs through the first postembryonic molt to insure normalcy.

The test method described above was developed because of the doubt existing in the minds of some members of the N.A.I.D.M. that the Peet-Grady test is satisfactory for the evaluation of liquid insecticides intended for use against cockroaches. We have found that this doubt is justified in the case of at least one commercial product, which is an excellent fly spray but a poor cockroach spray. It would therefore be sensible for buyers of cockroach sprays to write their specifications on insecticidal value around a standard cockroach test, rather than around the Peet-Grady test as is being done now. This change, if it occurs at all, will come slowly and should be beneficial in the long run to the industry. The replacement of the housefly as a test insect for control of quality of a manufacturer's product is neither to be expected nor desired, for no other insect is more suitable for this purpose from every point of view.

Bedbug Test Method

THE bedbug test method provides for the uniform application of a mist settling upon random samples of adult male bedbugs of known age.

Equipment

A. and B. *Rearing and Testing Rooms.* Same as for cockroaches (q. v.).

C. *Testing Equipment.* With the exception of the cage used to confine the insects during exposure to the settling mist, the testing equipment is the same as for the cockroach test. The test cage (Figure 4) consists of the bottom of a standard 100 mm. Petri dish in which are placed 25 small containers made from one dram homeo vials cut down to a height of 15 mm. To facilitate cleaning of this cage the vials are permanently fixed in the dish by cementing them to the bottom with a

Figure 8. Feeding bedbugs on a rabbit.

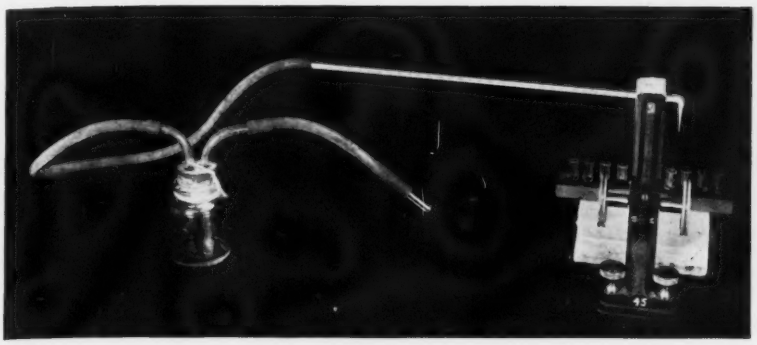

Figure 9. Adjustable micropipette for applying a measured quantity of insecticide to individual bedbugs in small tube containers.

celluloid-acetone mixture. The surface of the cement is lacquered to waterproof it. Prior to use of the cage in a test, disks of filter paper (diameter equal to the inside diameter of the vials) are stamped out by a punch (made by the junior author). One disk is pressed to the bottom of each vial, using a golf tee as a plunger, and one adult male bedbug is placed in each vial. The bugs do not climb the walls of the vials. They are segregated in this way so that each will receive the same quantity of mist. Without segregation, they would huddle together, those on the top of the pile tending to protect those below from the settling mist.

D. *Rearing Equipment.* The rearing equipment described below is to be kept on a large table bounded by a metal moat. The moat should be filled with oil, or water and oil, to prevent escape of bugs that may be dropped during transfer of the insects from one cage to another. The table top should have a smooth white surface so that dropped bugs can be easily seen. All handling of bugs should be done carefully over this table with sleeves rolled up.

1. Cage: The only type of cage required consists of the bottom of a large Petri dish (about 140 mm. diam.) and a cover of white organdy cloth of about 60-mesh tightly stretched over and cemented into a 6-inch embroidery hoop. The cover is held securely in position by a pair of heavy rubber bands. The complete cage is shown in Figure 5. Pieces of blotting paper are placed in cages of nymphs as shelters and to absorb the liquid excreted in large quantities after feeding. The bottom of feeding cages for adult bugs is covered by a circle of blotting paper; that of egg-laying cages by mimeograph paper upon which the eggs are deposited.

2. Rabbit holder: There is needed a rack upon which a rabbit may be stretched out upon its back and held securely. A satisfactory type of rabbit holder is shown in Figure 6. Holding the rabbit by the scruff of the neck in one hand and seating it upon the rack, the operator places the loops of the cords over the hind legs with the other hand and tightens the cords by turning the small windlass shown on the side of the rack in Figure 6. Then the rabbit is lowered upon its back and cords are attached to the front legs.

3. Clippers: To facilitate the feeding of bedbugs upon the belly of a rabbit, the hair must be removed from the belly. This is done with barbers' hand clippers after the animal is tied down upon the rack. Clipping was found to be easier to perform than shaving and the results are just as good.

E. *Food.* Rabbit blood. For the production of about 1000 test bugs per week six large female rabbits were used, two of them being used each week in rotation. It has not been proved that no fewer than six rabbits so used will suffice, but it can be said that these rabbits, exposed once every three weeks to the feeding of thousands of bedbugs showed no discomfort or ill effects during or after the treatment. Female rabbits are recommended because they appeared to be more amenable to handling than males.

F. *Aspirator.* The aspirator shown in Figure 3 is satisfactory for collecting bedbug eggs. See also Figure 7 which shows the aspirator in use for picking up bedbug eggs and shows other rearing equipment on the rearing table.

G. *Test Insect.* Week old adult male bedbugs fed two days previous to testing should be used as the test insect.

H. *Reference Insecticide.* The current Official Test Insecticide of the N.A.I.D.M. is recommended.

Procedure

A. *Rearing.* The operations for rearing the bedbug require more time and care than those recommended for the German cockroach. They consist of feeding each cage of bugs once a week, transferring bugs from one cage to another, and separating males, females and eggs (cf. Janisch, 1933, and Rendtorff, 1938).

The bugs in a cage are fed by laying it inverted upon the clipped belly of a rabbit, the organdy cloth top now becoming the bottom of the cage in contact with the skin of the rabbit. The cage is held firmly against the belly by a large rubber band attached to the rack as shown in Figure 8. It is then covered with a black cloth, because the bedbugs feed more readily in the dark. Under these conditions bedbugs of all instars are quickly attracted to the warm skin of the rabbit and insert their piercing and sucking mouthparts through the meshes of the cloth into the skin of the rabbit, pumping themselves full of blood in a remarkably short time. A cage is allowed to remain on a rabbit for not more than 15 minutes. On a rabbit that is large enough, two cages, each containing from 500 adult bugs to 2000 young bugs can be fed at the same time. It was customary to feed about 20 cages of bugs over a period of

two hours on one rabbit without adverse effect on the animal.

The bedbugs were distributed among the cages in such a way that 40 cages were kept full of bugs in various stages of development without overcrowding. This necessitated frequent transferring and thinning out of populations in cages. No exact timetable of operations can be given. In general, however, it may be said that all bugs were fed once a week, no more frequent feeding being necessary because one full meal suffices to carry a bedbug from one molt to the next. As the bedbug has five nymphal instars, those bugs that fed at each opportunity developed from the first instar to the adult stage in five weeks.

Starting with males and females in egg-laying cages, the procedure is roughly as follows: The eggs laid during a week are loosened from the paper with a stiff brush, and bugs and eggs are brushed into a 16-mesh sieve through which the eggs fall into a clean dish. Eggs from several cages are combined. Bugs from the screen are brushed into feeding cages and two days after feeding are returned to egg-laying cages. During these transfers dead bugs are removed and new adults added, and the egg laying-feeding cycle is repeated indefinitely. All eggs in a collection that are to hatch will hatch in within 6 or 7 days. As the bugs increase in size they are distributed among several cages to avoid overcrowding.

Once a week newly matured bugs are removed one at a time by delicate forceps from all dishes containing them. This operation is the most tedious and time consuming of all. Many of the male bugs are set aside at this time for use in tests. Other males and all females are added to adult feeding cages for subsequent breeding. The males intended for tests are fed at times that make them available for the tests two days after feeding.

B. *Testing.* Each application of settling mist was made upon a test cage containing 25 bugs. Otherwise the testing equipment and its operation were the same as described for cockroaches. Of course, the period of exposure was adjusted so as to give a kill of about 50 per cent with the O.T.I. For the tests reported in Table 2, the timing was as follows: Spray 30 seconds, pause 20 seconds, expose 70 seconds. An average deposit of 0.73 mg. of oil per sq. cm. was obtained by this timing.

Following the application of the settling mist, the bugs were held for observation in the vials in which they were treated, thereby giving residual effect, if present, a chance to operate. All bugs not able to walk on a smooth glass surface were called dead.

Conditions for Evaluation

The conditions for official evaluation of fly sprays by the small group Peet-Grady method (*Soap Blue Book*, 1939) is recommended for evaluation of liquid household insecticides by the foregoing bedbug test method. An example of an evaluation carried out on bedbugs is given in Table 2.

Discussion

Much of the discussion on cockroaches applies also to bedbugs as test insects. At present the cockroach method is the more practical of the two, but further evolution may reduce the bedbug method to the simplicity of the cockroach method. It may not be necessary to use adult bedbugs in the tests. If newly hatched nymphs can be used satisfactorily, much time and effort can be saved in the rearing procedure and much larger numbers of test insects can be obtained. Furthermore it may not be necessary to segregate newly hatched nymphs during application of the settling mist. If so, it would be easy to treat lots of 100 or more en masse. Preliminary tests indicate possibilities here.

The use of adult male bedbugs is proposed in this report only because our present experience in testing is limited to adults and to eggs. It was necessary to use the adult stage in the drop test method to be described in the next section, and the use of the adult male was carried over into the settling mist method for comparative purposes.

It is interesting to note that the marked difference in susceptibility to liquid insecticides found in the sexes of adult houseflies and cockroaches was not found in adult bedbugs when the susceptibility of males and females to a highly refined kerosene was compared by settling mist tests. The males may be more susceptible than the females (Table 3) but the difference in mean mortalities was not significant. See Table 4 for the properties of the kerosene used.

Table 2. An evaluation of an unknown pyrethrum insecticide vs. the O.T.I. against the adult male bedbug used two days after feeding for the first time as an adult.*

Pair	*Date* 1939	*Unknown* No. 1 *Per cent kill*	*O. T. I. Per cent kill*	*Difference*	*Deviation from mean difference*	*Deviation squared*
1	4/12	76	57	+19	+ 5.8	33.64
2	4/13	76	67	+ 9	— 4.2	17.64
3	4/24	60	51	+ 9	— 4.2	17.64
4	4/26	69	45	+24	+10.8	116.64
5	4/27	61	50	+11	— 2.2	4.84
6	5/1	64	48	+16	+ 2.8	7.84
7	5/3	73	59	+14	+ 0.8	0.64
8	5/4	65	54	+11	— 2.2	4.84
9	5/8	47	29	+18	+ 4.8	23.04
10	5/9	53	52	+ 1	—12.2	148.84
		—	—	—		—
		64.4 M	51.2 M	13.2 M.D.		325.60 sum d^2

Mean difference equals +13.2; standard error of mean difference equals 1.9.

* Each test recorded in the table was made on 100 insects in 4 samples of 25 bugs each.

Table 3. Relative susceptibility of adult male and female bedbugs of the same physiological age to a highly refined kerosene; 100 insects per test.

Test No.	Date 1939	Mortality (per cent) Male	Female
1	2/15	59	59
2	2/16	59	45*
3	2/20	37	28
4	2/22	48	47
5	2/23	64	39*
6	2/27	72	27*
7	2/29	72	60
8	3/3	65	54
9	3/6	47	33*
10	3/8	50	51
		57 M	44 M

*Difference statistically significant according to the chi-square test.

Table 4. Properties of a highly refined kerosene* used in tests mentioned in this paper.

Gravity, A.P.I.	49.4
Specific gravity at 60° F.	0.7822
Saybolt viscosity at 70° F.	33.5 sec.
Flash point, Pensky-Martens, °F.	168
Neutralization number	0.01
Sulfur, per cent	0.10
Unsaturation, GR and DC per cent	0.00
Unsulfonatable residue, A.S.T.M., per cent	98.6
Distillation, A.S.T.M. °F.	
Initial B.P.	391
10%	410
20%	414
30%	417
40%	420
50%	423
60%	428
70%	433
80%	441
90%	454
End point	498
Paraffinicity factor	12.3

*Properties determined by the Gulf Research and Development Co. through the courtesy of W. A. Simanton.

Many comparative tests were made of various liquid insecticides vs. a highly refined kerosene (Table 4). This oil alone is effective against bedbugs. Some substances added to this oil increased its effectiveness; others decreased its effectiveness. Results along this line will not be published until further work is done to explain the unexpected decreases in effectiveness. Comparative tests against eggs will also have to be extended before publication. These tests, however, served to give us confidence in the reproducibility of results obtainable by the methods described in this paper.

Bedbug Drop Test Method (Alternative)

Because the number of bedbugs available for testing purposes was relatively small at first, it was thought that a method similar to that of Nelson *et al.* (1934), in which the quantity of insecticide received by each insect is accurately controlled, might be more satisfactory than a settling mist method. When larger numbers of bugs became available, the drop test was discarded by the writers in favor of the more rapid settling mist method described above. However, the drop test is described here because it can be used to determine the quantity of insecticide required to kill individual bedbugs.

The equipment used was a movable pipette for applying measured quantities of insecticide to individual bugs (Figure 9) and containers (also shown in Figure 9) for holding the bedbugs in position during the application.

The pipette was made from a piece of thermometer tubing by drawing one end to a fine tip at right angles to the main part of the tubing. A glass mouthpiece was connected to the other end of the pipette by means of a piece of rubber tubing in which was interposed a small catch bottle to prevent the entrance of saliva into the capillary. The pipette was attached to the rack and pinion of a microscope base, making possible fine adjustments in vertical position.

A rough calibration gave a value of 0.019 cu. mm. per degree mark. The use of a pipette of such small bore makes it possible to apply a median lethal dose of insecticide without resorting to dilution with nontoxic liquids.

Bugs were confined individually in small glass containers made by fusing the ends of short pieces of 8 mm. glass tubing. In containers of this size, the bugs are able to rest flat on the bottom and yet cannot move in any direction. For convenience in handling, a row of ten containers was cemented to a small strip of wood.

To apply the insecticide, the pipette was filled and one of the glass containers with a bug in it was placed directly below the tip. The pipette was then racked down until the tip touched the bug in the middle of the dorsal surface immediately behind the rudimentary wings. Sufficient pressure was applied to prevent the bug from changing its position. After applying the desired dosage by exerting a gentle pressure on the mouthpiece, the pipette was racked up, and the next bug similarly treated. Treated bugs were left in the containers until mortality counts were made 24 hours later. Reading glasses, not shown in Figure 9, were used to read the position of the column of oil in the capillary and to help the operator place the tip of the pipette properly on the bug.

By the foregoing method, the median lethal dose of a refined kerosene (Table 4) was found to be about 0.076 cu. mm. for male bedbugs used 2 days after feeding for the first time as adults.

Summary

1. Tentative methods are recommended for evaluation of liquid household insecticides against the German cockroach and the bedbug. In brief, the application of a settling mist is recommended against second instar cockroaches and against adult male bedbugs. Paired tests of unknown vs. the Official Test Insecticide of the N.A.I.D.M. are to be made in order to evaluate unknowns as recommended in the small-group Official Peet-Grady method. Directions given include rearing of test insects, equipment, and testing procedure. Examples are given of results obtained by the methods recommended.

2. A description is given of an alternative bedbug test method in which measured volumes of oil are forced from a capillary pipette directly upon individual bedbugs.

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McCay, C. M. and R. M. Me-

(*Turn to Page* 113)

The Case for Deodorized Insecticide Oils

By A. B. Weingard
Pennsylvania Refining Co.

FOR some years, ordinary kerosene was the only oil used as a base for various insecticide sprays, such as fly spray, moth spray, bed-bug spray, mosquito spray, etc. However, as progress takes place in almost every industry, so it is in the insecticide industry. In the past few years, there has been made available by refiners of petroleum a much more highly refined distillate, possessing practically no odor and freed from the impurities of ordinary kerosene. This deodorized solvent, if properly refined, has ten to fifteen per cent of the undesirables of the unrefined distillate removed, and possesses the useful properties of ordinary kerosene with none of its drawbacks, when used as an insecticide solvent. Deodorized base has become more and more popular and, of course, the feature that has brought about this popularity is the absence of tell-tale kerosene odor.

In past days of insecticide manufacturing, attempts were made, and successfully, to mask the odors of the kerosene with heavy perfumes, but, unless the perfume or essential oil was of a very positive type, the odor of the kerosene still lingered long after the perfume was dissipated. But, in cases where a heavy perfume such as methyl salicylate, sassafras, etc., was used successfully to mask the kerosene odor, the perfume then left a very undesirable tell-tale odor that was probably just as objectionable as the kerosene odor itself.

Now, a finished insecticide spray, employing deodorized kerosene as a base, may be pleasantly perfumed at a minimum cost, since it is comparatively easy to mask the very slight odor of this product, as the undesirable odors of certain sulfur compounds and unsaturates have been removed.

In many cases insecticides and fly sprays are used in restaurants, dining rooms, grocery and food stores, coming in contact with foodstuffs, and the use of deodorized kerosene as a base, refined to a very low degree of unsaturation, will naturally overcome the tendency of tainting and contamination.

The proper, highly-refined deodorized base also possesses excellent shelf life, and its tendency to become rancid is at a minimum, due to the fact that the heavy ends and unsaturated hydrocarbons have been removed.

It is important that the proper hydrocarbon fraction be employed as a fly spray base. An insecticide spray must be broken up into a fine mist, which will float in the air for as long a time as possible, so as to effect a high kill and knock down. Too many heavy ends, or too high a distillation end point, will cause the mist to precipitate too rapidly. Conversely, too many light ends, or too low a distillation boiling point will cause the spray to evaporate too rapidly. Therefore, highly volatile ends, which are inflammable, and heavy ends, which cause staining and oily residue, should not be present in a high grade insecticide carrier.

The question has been asked whether a deodorized base will kill as many insects when used as a spray base as ordinary kerosene. Experiments have shown that the toxicity of the base is relatively very slight, and not to be compared to the pyrethrum extract, or other toxic ingredient used. The difference in toxicity between straight kerosene and a deodorized base of practically the same boiling point is practically immeasurable. It is of extreme importance, in comparing products of these two types, that the boiling points be exactly the same throughout the entire distillation range.

Deodorized kerosene has also found extensive use in the manufacture of moth and bed-bug sprays. As a moth spray, it is often compounded with paradichlorobenzene and sufficient carbontetrachloride to make it non-inflammable. Bed-bug sprays, even the type having a strong odor of phenol, are generally much improved with respect to leaving an undesirable residual kerosene odor after the phenol odor has disappeared, by the substitution of an odorless base in place of the regular kerosene.

Generally speaking, most high-grade deodorized insecticide bases have specifications coming within the following range:

Specific gravity	0.775-0.800
Distillation range	385-500°F.
Flash point (open cup)	170-180°F.
Saybolt Color	plus 30
Saybolt viscosity at 100°F.	30-31

Likewise, there are several tests to denote impurities and the extent to which the deodorized base has been refined. Three of the most common tests follow:

(1) Unsulfonated Residue.—This test consists of mixing concentrated sulfuric acid and the deodorized kerosene at a specified temperature, then centrifuging or settling to note the remainder, or the part of

(*Turn to Page* 113)

TOXICITY OF TEPHROSIA

A study of the toxicity of tephrosia virginia roots prepared by several methods

By A. F. Sievers and W. N. Sullivan

*U. S. Department of Agriculture**

IN CONNECTION with investigations of *Tephrosia virginiana*, a native legume commonly known as devil's shoestring, as a possible domestic commercial source of a rotenone-containing insecticide, it has been necessary to make extracts of the root for chemical analysis and biological tests. The best solvents and procedure for the extraction of derris and cube are well known, but inasmuch as very little previous work has been done with the devil's shoestring, it seemed advisable to determine particularly what procedure is permissible to obtain, as rapidly as possible, extracts for tests on flies.

As in the case of derris and cube, acetone is an excellent solvent of the active constituents of the root of this plant. There was some question, however, whether extraction on a hot plate, removal of the solvent to determine the total extract, and similar procedures whereby the ex-

*Mr. Sievers is senior biochemist of the Bureau of Plant Industry, and Mr. Sullivan with the Bureau of Entomology and Plant Quarantine.

TABLE 1—Results of toxicity tests on flies of extracts of the roots of Tephrosia virginiana prepared by several methods. All extracts were tested at such a concentration that 1 cc contained the extractive from 4 mg. of root.

No. of Extract	*Ratio of Root to Solvent*	*Method of Preparation*	*Degree of Color with Durham Test*	*Percentage of Mortality In 72 Hours*				
				Series 1	*Series 2*	*Series 3*	*Series 4*	*Average*
	gm/cc							
1	1- 5	Extracted with acetone by shaking for 6 hours at room temperature. (Portions of this extract used for Nos. 2, 3, 4 and 5)....	Dark blue	33	53	47	39	45
2	1- 5	From 25 cc of No. 1 the acetone was boiled off on water bath (maximum temperature of bath 90° C), the last portions being removed with suction. The residue was redissolved in 25 cc of acetone.....	Dark blue	39	50	42	33	41
3	1- 5	50 cc of No. 1 was boiled under reflux on a hot plate for 1 hour.....	Dark blue+	31	41	49	57	44
4	1- 5	50 cc of No. 1 was boiled under reflux on a hot plate for 7 hours.....	Dark blue+	24	43	64	31	40
5	1- 5	From 25 cc of No. 4 the acetone was removed on water bath as in No. 2 and the residue redissolved in 25 cc of acetone....	Dark blue	22	49	61	44	44
6	1-10	Same as No. 1 but the ratio of solvent to root was doubled to determine whether extraction in No. 1 was complete.....	Dark blue	25	36	41	27	32
7	1- 5	Extracted with chloroform by shaking for 6 hours at room temperature. From 25 cc the chloroform was removed on water bath at atmospheric pressure (maximum temperature of bath 90° C) and the residue dissolved in 25 cc of acetone[1].....	Dark blue+	37	35	52	38	40
8	1- 5	50 cc of No. 7 was boiled under reflux on hot plate for 1 hour, the chloroform removed under reduced pressure in water bath (maximum temperature of bath 65° C), and the residue dissolved in 50 cc of acetone	Dark blue+	40	41	47	32	40
9	1- 5	50 cc of No. 7 was boiled for 7 hours under reflux on a hot plate. From 25 cc the chloroform was removed under atmospheric pressure on water bath (maximum temperature of bath 90° C) and the residue dissolved in 25 cc of acetone.....	Dark blue+	37	43	53	33	43
10	1- 5	From the second 25 cc portion of No. 9 the chloroform was removed under reduced pressure on a water bath (maximum temperature of the bath 65° C) and the residue dissolved in 25 cc of acetone..	Dark blue+	35	49	41	40	41
11	1-10	Same as No. 7 but the ratio of solvent to root was doubled to determine whether extraction in No. 7 was complete.....	Dark blue	34	56	34	30	38

[1]Chloroform extracts cannot be te ted on flies as such; therefore in the case of Nos. 7 to 11, inclusive, the solvent had to be removed and the residue dissolved in acetone. These residues were in all cases completely soluble in acetone.

tract is subjected to heat can be resorted to without reducing the toxicity of the extract as measured by tests on flies.

It was desired also to ascertain whether the use of heat in the extraction of the root with chloroform for the determination of rotenone and total chloroform extractives is permissible and whether such extraction with subsequent removal of the solvent and solution of the residue in acetone involved any procedure that causes decomposition of the toxic substances. Accordingly, a series of acetone and chloroform extracts of the root were prepared by the procedures shown in the accompanying table and the toxicity of these extracts determined by tests on flies by the Campbell-Sullivan turntable method. Each extract was tested on four different lots of flies on as many days.

A statistical analysis of the results of these tests shows that the differences in toxicity of these extracts are not significant as measured by the analysis of variance. It follows, therefore, that the conditions to which the extracts were subjected by the several manipulations described do not result in the destruction of the toxic substances present in the root to a degree that can be detected by the method of testing used in this case.

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Deodorizing Insect Oils

(*From Page* 109)

the sample unattacked by the acid. The portion of the original sample unattacked by the acid is expressed in per cent by volume unsulfonated residue. This test should be 95 per cent, or higher, as per the test of the California State Department of Agriculture, Division of Chemistry.

(2) Acid Test.—This test, set up by the U.S.P. for liquid petrolatum, may also be used for deodorized kerosene to note the carbonizable material or reactive compounds to sulfuric acid. This test consists of shaking 5 cc. of the insecticide base with 5 cc. of concentrated sulfuric acid, in a bath of boiling water every 30 seconds for a period of 10 minutes. The darker the acid layer upon separation, the less the degree of refining. An untreated base will have a pale amber acid test.

(3) Iodine Number. — This test denotes the per cent weight iodine absorbed by an oil, as run by a standard test procedure such as the Hanus method of iodine absorption. A highly treated deodorized kerosene should have an iodine number less than 1.0. This denotes a very low degree of unsaturation.

In conclusion, let it be pointed out that there is no place in the manufacture of any liquid insecticide where a properly deodorized oil is not superior to an ordinary kerosene. Any heavy residual kerosene odor from an insecticide is an unnecessary drawback to sales which has been outmoded by progress in the industry,—just as heavy covering perfumes have been outmoded by light quickly-dissipated odors in minute percentages whose use is only possible in deodorized oils. The day of the old-type kerosene base bug killer is past. It simply does not fit in the modern insecticide picture.

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Crawling Insect Tests

(*From Page* 107)

lampy. 1937. Care and rearing of *Blattella germanica*. Culture Methods for Invertebrate Animals. Comstock Publishing Company, Inc., Ithaca, N. Y. p. 283.

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Woodbury, E. N. 1938. Test methods on roaches. Soap and San. Chem. 14(8):86-90, 107, 109.

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Stabilized Rotenone

Deterioration of rotenone by the action of light and air is inhibited by the addition to the rotenone, which may be in solution in a suitable solvent such as acetone, of a small proportion of a stabilizer such as salicylic acid, dichloroaniline or an aminophenol or an anthranilic acid. Ludwig J. Christmann and David W. Jayne, Jr., to American Cyanamid Co. U. S. Patent No. 2,151,651.

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Rubless Floor Wax

A water-base floor polish contains the following:

	Parts
Triethanolamine	1.3
Oleic acid	0.9
Carnauba wax	7.5
Borax	0.6
Water	89.7

Melt the wax and add the oleic acid at a temperature not over 90°C. Add the triethanolamine slowly with constant stirring. The solution should be clear at this point. Dissolve the borax in a small amount of boiling water and add with stirring. Add the water, previously heated to boiling, with stirring. J. M. Vallance. *Manufacturing Chemist* **10,** 197-8 (1939).

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Moth Killer

A moth killer being tried in France is hexachloroethane which comes in the form of powdery crystals, easily compressed into tablets. The chlorine content of the crystals is 90 per cent. The crystals sublimate to produce a heavy gas harmless to warm-blooded animals, but which kills insects. When the material is kept in the top of clothes closets the vapors drop down and fill the space below. *Manufacturing Chemist* **10,** 199 (1939).

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Thymol as Antioxidant

Thymol, isothymol and similar isomers possess the power to kill and inhibit the growth of bacteria and fungi. Isothymol is advantageous as an antioxidant in the prevention of rancidity and is sold for this purpose under the name of Stabilizer No. 1. In vegetable oils as well as in sulfonated castor oil, isothymol is used to inhibit oxidation. This property makes isothymol of interest to manufacturers of textile oils of all kinds. Its effective concentration in oil is 0.1-0.2 per cent. *Givaudanian*, July-August, 1939.

News.....

Cole Chemical Expands

Cole Chemical Corp., Long Island City, N. Y., is expanding its plant from 18,000 square feet to 28,000 square feet. The Cole Co. now has Benedict R. Harris representing them in the field.

Cites No-No Germ Control

Van Products Co., New Milford, N. J., has been ordered by the Federal Trade Commission to cease representing that its product "No-No Germ Control" is a germicide; will kill germs that cannot be reached by powder or liquid preparations; or is non-irritating and odorless. The preparation was found to be a formaldehyde solution effective as an antiseptic rather than a germicide.

Grant Insect-O-Soap Mark

Andrew Wilson, Inc., insecticides, Springfield, N. J., has been granted, on re-application, the trademark "Insect-O-Soap." The certificate of registration covering this application was allowed on July 31st, and issued on August 22nd, 1939.

New Sanitary Specialty Co.

International Solvents Corp., Buffalo, N. Y., has recently been organized for the production and merchandising of a toilet and urinal bowl cleaner. The new firm is located at 24 East Ferry Street.

United Sanitary Expands

United Sanitary Chemicals Co., maker and jobber of sanitary chemicals and janitors supplies, 402 West Lombard St., Baltimore, has leased the first floor and basement of an adjacent building at 400 West Lombard St., to provide space for an expansion of its facilities.

Nominate White For Mayor

Dr. Robert C. White, president, Robert C. White Co., insecticide manufacturer, Philadelphia, has been nominated on the Democratic Ticket for Mayor of Philadelphia. He has two opponents for the primary election on September 12th, but it is thought that he will have little opposition. The final election is in November. Dr. White is a well-known figure in the insecticide and disinfectant industry, having been president of the National Association of Insecticide and Disinfectant Manufacturers for 1931 and 1932, and a member of the board of governors from 1933 to 1937. He is also widely known in Philadelphia, having been city controller for the past several years.

Dr. Robert C. White

Associated Chemists to Move

Associated Chemists, Inc., Chicago manufacturers of insecticide concentrates, have bought the one-story brick building at 2947-49 N. Oakley Avenue and the company's general offices and laboratories will be moved from their Ashland Avenue location as soon as improvements are finished at the new location. Arthur Srebren, president of Associated, reports that a greatly increased volume of business made the change necessary.

Against Bedbugs?

What materials are most effective against bedbugs? That opinions differ sharply on this subject is quite well known. A discussion of opinions on the how, when and where of bedbug insecticides will be published in an early issue,—"The Pros and Cons of Bedbug Control."

Wason Resigns As Zonite Head

Robert R. Wason recently resigned as president of Zonite Products Corp., New Brunswick, N. J., in order to devote full time to his position as president of Manning, Maxwell & Moore, Inc. He still retains his directorship in the company. John M. Olwyler is replacing Mr. Wason.

Issue Maintenance Booklet

Stonehard Co., maintenance materials, Philadelphia, has just issued a booklet entitled "Over The Rough Spots." It is illustrated with photographs and is said to give the answers to various plant maintenance problems.

D & O To Sell Hydrolin

Dodge & Olcott Co., New York, will act as exclusive distributors for the dihydrolin concentrates manufactured by the Whitmire Research Corp., St. Louis, in the Eastern States, on the Pacific Coast, and in foreign countries. A previous news item on the subject failed to include mention of the Pacific Coast States.

Pyrethrum Imports Down

Imports of pyrethrum into the United States during the first seven months of 1939 dropped more than 25 per cent in volume from the figures for the corresponding period in 1938, according to a recent bulletin issued by the U. S. Department of Commerce. The total volume imported from January to July this year amounted to 5,859,265 lbs. valued at $1,265,819. This compares with the 1938 figure of 7,483,745 lbs. valued at $1,178,017. At present, there seems to be no favorable outlook for improvement in the volume of imports, and consequently, no reduction from the high price level of pyrethrum powder in the United States market.

Kenya Pyrethrum Exports Up

Exports of pyrethrum from Kenya during 1938 amounted to 35,987 cwt., valued at £180,043, according to the American Consulate at Nairobi. Of this amount, the United States accounted for almost 85 per cent while the United Kingdom, China and Australia accounted for about 4 per cent each. Exports of pyrethrum in 1937 amounted to 19,413 cwt. and were valued at £59,815.

Wants Insecticide Agency

A firm in Singapore, Straits Settlements, is interested in the establishment of an agency for the sale of American made insecticides. Further details may be had by writing to the U. S. Bureau of Foreign and Domestic Commerce, referring to File No. 3205.

F.T.C. Cites Quick-Death

Ohio Products Co., North Madison, Ohio, has entered into a stipulation with the Federal Trade Commission to cease representing that "Quick-Death," a rat poison, is nationally known or that its active ingredient, red squill, is a new or original ingredient for rat poison, that it is non-poisonous or absolutely harmless under all circumstances; that it is 100 per cent effective in the destruction of rodents, and that all rodents who eat "Quick-Death" will go outside of the buildings to die.

Carnauba Wax Substitute

Innis, Speiden & Co., New York, have recently announced a new product "Isco" refined wax No. 352, which, say the producers, makes an excellent substitute for carnauba wax. The new product has a melting point ranging from 180½ to 181½°F. Samples and further information may be had by writing to the company's New York office.

Minnesota Chemical Expands

Minnesota Chemical Co., soaps and cleansers, St. Paul, is expanding its building by enlarging the office and shipping department. Plans are also being made for the expansion of production facilities.

H. J. Davies Moves

H. J. Davies Co., pest control operators, San Francisco, have moved to newer quarters at 3934 Geary Boulevard.

One of the few exhibits at the New York World's Fair focussing any attention on problems of insect infestation or control is this display in the Hall of Medicine. The illuminated cow calls attention to the severe reduction in our food supply suffered each year through the persistent attacks of flies, mosquitoes, ticks and other insect pests.

Exhibits At Poultry Show

Tobacco By-Products & Chemical Corp., Louisville, Ky., exhibited its product "Black Leaf 40" at the recent Cleveland Poultry Show. Among the other exhibitors were Martindale Electric Co., Cleveland, who displayed the "Martindale" protective mask for working with soap, insect powder, cleaning powder, etc., and Merck & Co., Rahway, N. J., displaying its "Iodine Vermicide."

Hooker Electro Moves

Hooker Electrochemical Co. has announced the transfer of its administrative, sales and accounting headquarters and personnel to Niagara Falls, N. Y. A local office will continue to be maintained in New York City.

DCAT Annual Fall Meeting

The Fourth Annual Fall Meeting and Golf Tournament of the Drug, Chemical and Allied Trades Section of the New York Board of Trade will be held Oct. 19 to 21, 1939, at Skytop, Pa. Business sessions will be held in the afternoons, while mornings will be devoted to golf. Other highlights include entertainment for the ladies, movies, a "Get Acquainted Party" and a banquet on the final evening. Chairmen of the various committees are: Ralph E. Dorland, arrangements; Victor E. Williams, banquet; S. B. Penick, Jr., "Get Acquainted Party"; Ira Vandewater, golf; A. A. Wasserscheid, ladies committee; Thos. R. Farrell, program; Turner F. Currens, publicity; John A. Chew, reception, and Robert B. Magnus, transportation.

Consolidated Buys Building

Consolidated Royal Chemical Corp., chemical manufacturer and distributor, Chicago, recently purchased a 12-story building at Harrison and Wells Streets, which it had partially occupied for the past five years. Two additional floors in the building will now be used, giving the company a total floor space of 84,000 square feet. James A. Hirschfield, president, stated that approximately $25,000 would be spent on improvements to the building.

Insect Pests of Derris

More than sixty insects that attack derris are listed in an article, "Insect Pests of Derris," written by R. C. Roark, Bureau of Entomology and Plant Quarantine, which appeared in the *Journal of Economic Entomology* 32 (2): 305. The list not only contains the names of the insects, but also the part of the plant they feed on, such as, roots, leaves, twigs, etc. References for their behavior are cited in all instances. The article also devotes space to some case histories of various insects attacking derris, while growing, being shipped and stored. Reprints of the article are available.

Market Data Handbooks

The Department of Commerce has recently issued the 1939 editions of the *Consumer Market Data Handbook* and the *Industrial Market Data Handbook of the United States*. The Consumer handbook presents 82 series of consumer marketing data for each of 3,070 counties in the United States, with less complete data given for each of 3,165 cities. The statistics are classified under five principal groups, i.e., population and dwellings, volume and type of business and industry, employment and payrolls, retail distribution by kinds of business and related indicators of consumer purchasing power, such as income. The Industrial Market handbook contains complete figures on industrial production, employment, value of products, cost of material, fuel and power, and output per wage earner for every county in the United States and for every city of more than 10,000 population. Copies of both handbooks may be had from the Superintendent of Documents, Washington, D. C. The Consumer handbook costs $1.75, and the Industrial handbook, $2.50 per copy.

Lambert Signs Stipulation

Lambert Pharmacal Co., manufacturer of "Listerine" antiseptic, St. Louis, has signed a stipulation with the Federal Trade Commission, that it will no longer represent that all dandruff is due to an infection with Pityrosporon ovale, that dandruff is necessarily a germ disease, that dandruff in all instances is passed from one person to another, and that these assertions are based upon "scientific fact." The company also agreed to stop claims that its product, "Listerine" cures or permanently relieves dandruff, kills the dandruff germ, or gets at the cause.

Opposes Formula Disclosure

Endorsing new intelligent labeling regulations, but condemning full formula disclosure on a package label, Roy E. Miller, president of the Miller Products Co., Portland, Ore., in a recent communication to *Soap & Sanitary Chemicals* makes the following comment:

"May we take this opportunity to compliment you on your editorial on page 19 of July, 1939 issue, relative to formula disclosure on a package label. We feel very strongly on this matter and share with Dr. Walter H. Eddy a feeling of skepticism as to the significance of the ingredients to the average user of a product. We agree to the statement of total per cent of either or both active and inert ingredients that might be required, but the exact technical formula should be filed, for checking purposes only with products as secured on the open market, with the commissioner of agriculture, state chemist, or other law enforcement official as outlined by yourself.

"The greatest value of formula disclosure on the package label is to those competitors who are unable to develop originality or think for themselves. A more confusing law could not be written for the protection of the public than the one which requires the statement of active ingredients in chemical terminology of which the user of the product has no conception or understanding.

"Another point where the manufacturer unjustly suffers is illustrated by the following: 'A wheat grower purchasing copper carbonate for treating wheat for smut was furnished the copper carbonate of almost a 100 per cent purity. The formula on the package label discloses the fact that the active ingredient expressed as metallic copper is 55 per cent and the user wishes to know immediately why he is paying good money for approximately 50 per cent filler.'

"We heartily endorse intelligent label regulations, but we do not consider formula disclosure in unintelligible chemical jargon a benefit to anyone except competitors."

C.S.A. To End Season Sept. 19

The Salesmen's Association of the American Chemical Industry has set Sept. 19 as the date for the final golf tournament of the year, at Pomonok Country Club, Flushing, L. I. The entertainment committee, headed by P. J. LoBue, has made special arrangements for the final gathering and the banquet, at which the yearly championship cup will be awarded, will be supplemented by a floorshow. Winners at the August tournament, held at the Bonnie Briar Country Club, Rye, N. Y., on Aug. 15, were: *Class A, low net*—Richard Quortrup, Barret Co. *Class B, low net*—R. Moister, Jr., Michigan Alkali Corp. *Guests, low net*—Don Woodford, Graselli Chemicals. *Member kickers, first*—Ed. Burke, Edward S. Burke & Co. *second*—Charles Slater, J. T. Baker Chemical Co. *third*—J. R. Eldridge, Virginia Smelting Co. *fourth*—Ira Vandewater, R. W. Greef & Co. *Guest kickers*—M. Hammond.

June Insecticide Exports

Exports of liquid insecticides from the United States in June, 1939 amounted to 489,471 pounds, valued at $108,326, according to the Bureau of Foreign and Domestic Commerce. Exports of powdered or paste insecticides for the same month were 25,109 pounds worth $11,393, while shipments of disinfectants, deodorants, etc., amounted to 230,907 pounds valued at $20,907. Canada and Venezuela accounted for large parts of these exports.

Wants Windshield Cleaner

A firm in Alexandria, Egypt, is interested in establishing an agency for the sale of an anti-mist solution for automobile windshields. Further particulars may be obtained by making application to the U. S. Bureau of Foreign and Domestic Commerce, referring to File No. 3274.

Harvey A. Curry Dies

Harvey A. Curry, who operated Harvey A. Curry Fumigating Co., Cleveland, died on August 11th.

Warn Against Insecticides

Warning that most insect sprays are toxic and irritating to the skin and in sufficient concentration are capable of causing death Dr. Louis Schwartz, Medical Director of the U. S. Public Health Service, and Dr. Leon H. Warren, Acting Assistant Surgeon of the same, in an article in "Public Health Reports" for Aug. 4 urge the use of poison labels on fly sprays and the use of protective clothing in applying them. They advise that the skin should be exposed as little as possible to their action and that the containers should be kept away from food and out of the reach of children.

This general broad warning against the supposed dangers of insect sprays comes in a report covering an investigation of alpha naphthyl isothiocyanate, which product according to these doctors, was the cause of dermatitis among those working with it. Mention is made also of dermatitis due to pyrethrum based on a report published by one of the authors in 1934, and to other insecticide materials to which the authors refer as "other cheaper poisons" which include most of the materials now in general commercial use for insect spray manufacture.

The report states also that the petroleum distillate usually used as a base for insecticides is also toxic and unless specially treated is irritating to the skin. It also says that "insecticide sprays containing these toxic substances are usually sold to the public without any warning that their contents are injurious." It goes on: "The only hint as to the toxicity of the product is given by the statement usually found on the can that the sprays are harmless if used according to directions." Copies of the Aug. 4 report may be secured from the U. S. Government Printing Office, Washington, D. C. at 5c each.

Gordon Baird of Baird & McGuire, Inc., Holbrook, Mass., sends us this snapshot of his wife, their four year old daughter, Ann Gordon Baird, and their four month old son, Phillips Campbell Baird, taken while they were vacationing at Dennisport on Cape Cod, Mass.

Editor's Correspondence

Editor,
Soap and Sanitary Chemicals.
Dear Sir:

Reference is made to the article by Drs. Louis Schwartz and Leon H. Warren in Public Health Reports of August 4, wherein they report alpha naphthyl isothiocyanate as a cause of dermatitis.

There seems to be some evidence that cursory reading of the report, and more particularly of very abbreviated abstracts published in the press, may cause confusion in the minds of readers. For this reason we would like again to call attention to the fact that isothiocyanates and aliphatic thiocyanates are two distinctly different grades of chemical compounds. Despite the similarity of part of their chemical nomenclature, under no circumstances and in no way should the isothiocyanate referred to by Drs. Schwartz and Warren be confused with the aliphatic thiocyanate known as "Lethane."

In the report of Drs. Schwartz and Warren they refer to a case where a formula consisting of 7 per cent pyrethrum flowers, 1 per cent powdered derris, 1½ per cent of an aliphatic thiocyanate (Lethane) and ¼ per cent alpha naphthyl isothiocyanate, produced dermatitis among the workers of that particular manufacturer, but when their formula was changed to drop the isothiocyanate and increase the aliphatic thiocyanate (Lethane) from 1½ per cent to 2 per cent, all the cases of dermatitis recovered and no new cases have occurred since. We believe this to be clearly indicative of Lethane's safety. In fact, Drs. Schwartz' and Warren's whole article discloses Lethane to be outstanding in its relative safety to humans when used as an insecticidal agent.

We believe that all insecticide manufacturers will be interested in reading the full Public Health Report rather than any abbreviated summary. From this it will be noted that Drs. Schwartz' and Warren's investigation supports the prolonged toxicological testing both before Lethane was first introduced and afterwards, and also the unquestionable evidence contained in the fact that Lethane has been in use for ten years on a vast scale without any evidence of being injurious.

Because of the widespread use of Lethane in the insecticide industry, we feel that your readers will be reassured to know of the foregoing facts which releases in the press and elsewhere failed to disclose.

Very truly yours,
C. J. DUMAS
ROHM & HAAS CO.

New Non-Soap Cleaner

A new all-purpose cleaner is being marketed by the Community Products Co., 160 Fifth Ave., New York, under the trade-name of "Newtra." The manufacturer states that the new product is a clear, odorless liquid with a pH of 7.0, and contains no soap, oils, fats, or solvents, and that it lathers better than regular soaps and is a more efficient and economical cleaner. They also state that it works equally well in hard or soft water, and is harmless to fabrics, and painted or varnished surfaces. The product was developed by Charles S. Glickman, chemist for the manufacturer.

Dodge & Olcott Co., New York, recently issued a pamphlet on "Essenols" and "Pyressenols" with their application in modern insecticides.

Lambert Earnings Up

Lambert Pharmacal Co., St. Louis, reported a profit of $652,657 for the six months ended June 30, 1939. This was equal to 87 cents a share and compares with a profit of $613,326, or 82 cents a share for the first half of 1938. Profits for the second quarter of 1939 amounted to $219,214 or 29 cents a share as compared to $223,324 or 30 cents a share for the corresponding months of 1938, and $433,443 or 58 cents a share for the first quarter of 1939.

Chemical Show To Open Dec. 4

A display illustrating sources of fats and oils used in the manufacture of soap, will be one of the features of interest to the soap industry at the Seventeenth Exposition of Chemical Industries to be held at Grand Central Palace, New York, during the week of Dec. 4 to 9, 1939. Diatomaceous earth products, as filter aids and as raw materials used as fillers and extenders, will also be shown in the same display. Other features of interest will be exhibits of containers and packaging machinery, and operating exhibits of pumps.

Porter Co. Expands Operations

H. K. Porter Co., manufacturer of industrial and switching locomotives, Pittsburgh, has expanded its activities by the establishment of a separate division for the design and manufacture of many types of processing equipment, including ball and pebble mills, tube mills, agitators, mixers, blenders, autoclaves, kettles, tanks, etc. Several of these products are said to incorporate new features of design and construction developed by the company's engineering department.

New Wax Polish

Midwest Manufacturing Co., Detroit, is marketing a new wax polish known as "Enduro Polish-and-Cleaner." The company claims that the product contains no turpentine or saponified oils, and eliminates the necessity for hard rubbing in order to obtain a good polish.

Five anglers, representatives of Fritzsche Bros., Inc., New York, recently made a fishing trip into the Rideau Lakes section of Ontario. The success of the party is evidenced by the picture. From left to right, the Waltonians are: Gordon Dick, N. C. Polson & Co., Canada; Joe Gauer, manager, Fritzsche's Chicago office; Jim Eller, Cincinnati; Lloyd Speck, Toronto; Pete Niles, Boston, and Fred Hilbert, New York.

Nat'l Adhesives Changes Name

National Adhesives Corp., lacquers, adhesives and allied products, New York, has changed its company name to National Starch Products, Inc. The management of the company will remain the same, with Alexander Alexander as chairman of the board, and Frank Greenwald as president. The company has recently purchased Piel Bros. Starch Co., Indianapolis, which will be operated as a division of National Starch Products, Inc.

Senn Appointed as Agent

George Senn, broker, Philadelphia, has recently been appointed agent in the metropolitan Philadelphia area for the Retort Chemical Co., Gainesville, Fla., manufacturers of pine tar, pine tar oil, pine tar pitch, destructively distilled turpentine solvents, and chemicals.

Chicago Ratproofing Ordinance

Chicago's city council is considering the adoption of a "ratproofing" ordinance to insure ratproof construction of buildings in the future. Provisions are included under which owners could be forced to ratproof old buildings and destroy rat breeding places. Hearings before a City Council Committee were opened in August.

Standard Chemical Moves

Standard Chemical Co., sanitary chemicals, Philadelphia, has moved to newer and larger quarters at 217 New Street.

Shampoo Trend

(*From Page* 28)

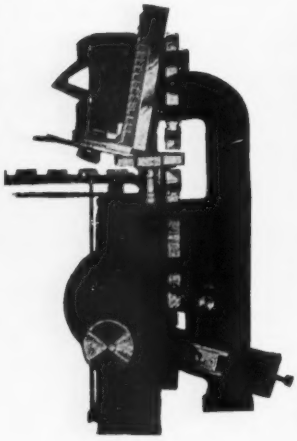
want of something better to do. There may be a bit of truth in that explanation.—probably just a small bit.

Whether winter or summer, if we are to believe the selected group which was interviewed, the customer very definitely knows what type and what brand of shampoo she wants. The druggist, it seems, has little opportunity to push or recommend any particular brand, but when the opportunity does present itself, the one giving the most profit is as usual the one recommended. The majority of the retailers seemed pretty well satisfied with their margin of profit on shampoos, stating that it was about the same as on other products, and that most shampoos came under the Fair Trade Standards.

Did the druggist ever receive any complaints? Yes, he did, but not to any greater extent than on other products which he carried in his store. Some of the typical complaints received were: (1) It bleaches dark hair. (2) Darkens light hair. (3) Leaves the hair too dry. (4) Irritates the scalp. (5) Too oily. (6) Leaves hair hard to manage. (7) Doesn't leave hair nice and soft, etc. The most frequent complaint about soapless shampoos was that the hair was left too dry, while the soap shampoo complaints ran the gamut from A to Z.

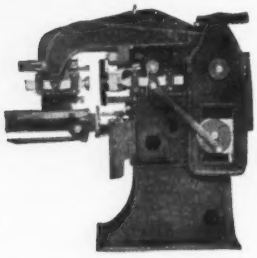
One last significant fact to be recorded was that the two leading brands of shampoos, one soapless and the other a soap, were the most widely advertised, being nationally known. Contrary to some popular belief, this national advertising does not entail a higher retail price, as they were on a level with most other brands. Several druggists made the comment that they received less profit on the advertised brands than they did on those that were not advertised, but this was the exception rather than the rule.

Special Offerings of SOAP MACHINERY *Completely Rebuilt!*

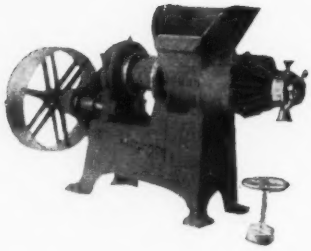


Small size fully automatic Jones toilet soap press. Capacity 150 to 200 small cakes per minute. A real buy at an attractively low price. Has been completely rebuilt in our own shops.

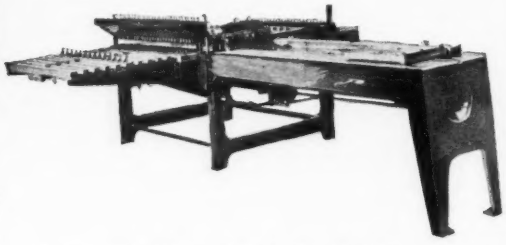
H-A SOAP MILL
This 4-roll granite toilet soap mill is in A-1 shape. Latest and largest size rolls.



4 JONES AUTOMATIC combination laundry and toilet soap presses. All complete and in perfect condition.



Single screw soap plodders with 6, 8, 10 or 12 inch screws. All completely rebuilt and unconditionally guaranteed.



2 Automatic Power Soap Cutting Tables.

INVESTIGATE THESE SPECIAL BARGAINS

•

Proctor & Schwartz 2-Fan Soap Chip Dryer with 36″ Roll. Complete. Very fine condition.

Johnson Automatic Soap Chip Filling, Weighing and Sealing Machines for 2 lb. and 5 lb. Packages guaranteed in perfect condition.

ADDITIONAL REBUILT SOAP MACHINERY

All used equipment rebuilt in our own shops and guaranteed first class condition.

- H-A, 1500, 3000, 4000, 5000 lbs. capacity. Steam Jacketed Crutchers.
- Dopp Steam Jacketed Crutchers, 1000, 1200, 1500 lbs. and 800 gals. capacity.
- Ralston Automatic Soap Presses.
- Scouring Soap Presses.
- Empire State, Dopp & Crosby Foot Presses.
- 2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.
- H-A 4 and 5 roll Steel Mills.
- H-A Automatic and Hand-Power slabbers.
- Proctor & Schwartz Bar Soap Dryers.
- Blanchard No. 10-A and No. 14 Soap Powder Mills.
- J. H. Day Jaw Soap Crusher.
- H-A 6, 8 and 10 inch Single Screw Plodders.
- Allbright-Nell 10 inch Plodders.
- Filling and Weighing Machine for Flakes, Powders, etc.
- Steel Soap frames, all sizes.
- Steam Jacketed Soap Remelters.
- Automatic Soap Wrapping Machines.
- Glycerin Evaporators, Pumps.
- Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch.
- Perrin 18 inch Filter Press with Jacketed Plates.
- Gedge-Gray Mixers, 25 to 6000 lbs. capacity, with and without Sifter Tops.
- Day Grinding and Sifting Machinery.
- Schultz-O'Neill Mills.
- Day Pony Mixers.
- Gardiner Sifter and Mixer.
- Proctor & Schwartz large roll Soap Chip Dryers complete.
- Doll Steam Jacketed Soap Crutchers, 1000, 1200 and 1350 lbs. capacity.
- Day Talcum Powder Mixers.
- All types and sizes—Tanks and Kettles.
- Ralston and H-A Automatic Cutting Tables.
- Soap Dies for Foot and Automatic Presses.
- Broughton Soap Powder Mixers.
- Williams Crutcher and Pulverizer.
- National Filling and Weighing Machines.

Send us a list of your surplus equipment—we buy separate units or complete plants.

NEWMAN TALLOW & SOAP MACHINERY COMPANY

1051 WEST 35th STREET, CHICAGO — Phone Yards 3665-3666

Our Forty Years Soap Experience Can Help Solve Your Problems

Classified Advertising

Classified Advertising—All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap*, 254 West 31st St., New York.

Positions Wanted

Chemist—Man with twelve years' experience in the insecticide field, chiefly in manufacturing and formulation, desires position with insecticide manufacturer. Good record, best references. Address Box No. 671, care of *Soap*.

Soap-Maker, Chemist, Perfumer: Old-timer in toilet, laundry, soda and potash soap manufacture. Teaches processes, remodels plants, etc. Hablo espanol. Address Box No. 673, care of *Soap*.

Chemist: M.Sc. 11 years' executive position. Extensive experience in North and South America in manufacture of soaps, waxes, industrial and household detergents, disinfectants, antiseptics, insecticides, pharmaceuticals and cosmetics. Apparatus, plant design. Analysis, research, superintendence. American, age 38, speaks German and Spanish. Interested in development and production. Goes anywhere. Address Box No. 669, care of *Soap*.

Soapmaker and Chemist: Well trained from the practical and scientific end, more than 10 years' experience in toilet soaps, soap powders, detergents, etc., handy man in every part of the factory, thorough knowledge of raw materials and all chemical analysis, wants steady connection. Best of references. Address Box No. 675, care of *Soap*.

Soap Maker and Chemist with long experience in the manufacture of all kinds and grades of soaps and soap products. Pacific coast preferred. Address Box No. 674, care of *Soap*.

General Manager with full knowledge of janitor and sanitary supply field, is open for position. Gentile, 40, fully qualified to take responsibility of sales, purchasing, credits, etc., with existing organization or organizing new company in janitor supply lines. Can arrange lines and credit with responsible manufacturers. Will consider managing sales for manufacturer. Address Box No. 665, care of *Soap*.

Positions Open

Essential Oils—New York Office of Grasse shipper looking for salesman well connected in trade and industry. Apply Box No. 664, care of *Soap* giving information as to previous connections, etc.

Wanted: Soap Maker, Chemist-Superintendent of experience with some capital to enter into manufacturing of same in medium-sized Mid-Western City—Wisconsin—Write with references to Box No. 667, care of *Soap*.

Miscellaneous

Floor Brushes—We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

Complete Soap Plant Equipment for Sale: Proctor soap chip dryer; automatic soap press; wrapping machine; 4 roll stone mills; foot press; plodders 6", 8", 10"; soap boiling kettles; 6 knife chipper; two-way cutting table; frames; filter presses; crutchers; mixers; boilers. Stein Equipment Corp., 426 Broome St., New York City.

Raw Materials and Equipment

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index of Advertisements, on page 130 for page numbers. *"Say you saw it in SOAP."*

ALKALIES

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
Eastern Industries
Hooker Electrochemical Co.
Innis, Speiden & Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

BULK AND PRIVATE BRAND PRODUCTS

Associated Chemists, Inc. (Insecticides)
Baird & McGuire, Inc. (Disinfectants)
Buckingham Wax Corp. (Wax Products)
Candy & Co. (Floor Products)
Chemical Supply Co. (Disinfectants, etc.)
Clifton Chemical Co. (Sanitary Supplies)
Cole Chemical Corp. (Sanitary Supplies)
Curran Corp. (Detergents)
Davies-Young Soap Co. (Potash Soaps)
Empire Chem. Prods. Co. (Sanitary Supplies)
Federal Varnish Co. (Floor Products)
Fuld Bros. (Sanitary Supplies)
James Good, Inc. (Sanitary Supplies)
Harley Soap Co. (Soap Specialties)
Higley Chemical Co. (Floor Seal)
Hockwald Chemical Co. (Sanitary Supplies)
Hysan Products Co. (Sanitary Supplies)
Koppers Co. (Disinfectants)
Kranich Soap Co. (Potash Soaps)
Milroy Products, Inc. (Cleaners and Detergents)
John Opitz, Inc. (Insecticides)
Peck's Products Co. (Sanitary Supplies)
Philadelphia Quartz Co. (Detergents)
Prominent Specialty Co. (Floor Products)
Geo. A. Schmidt & Co. (Soaps)
Shawmut Specialty Co. (Wax Products)
Sweeping Compound Mfrs. Co. (Sweeping Compound)
Twin City Shellac Co. (Wax Products)
Uncle Sam Chemical Co. (Sanitary Supplies)
T. F. Washburn Co. (Floor Products)
White Tar Co. (Disinfectants, etc.)
Windsor Wax Co. (Wax Products)

CHEMICALS

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
John A. Chew, Inc.
Columbia Alkali Co.
Diamond Alkali Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Eastern Industries
General Chemical Co.
General Dyestuffs Corp.
Hooker Electrochemical Co.
Industrial Chemical Sales Div.
Innis, Speiden & Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Solvay Sales Corp.
Standard Silicate Co.
Jos. Turner & Co.
Victor Chemical Works
Warner Chemical Co.
Welch, Holme & Clark Co.

COAL TAR RAW MATERIALS

(Cresylic Acid, Tar Acid Oil, etc.)

American-British Chemical Supplies
American Cyanamid & Chemical Corp.
Baird & McGuire, Inc.
Barrett Co.
Innis, Speiden & Co.
Koppers Co.
Monsanto Chemical Co.
Pittsburgh Coal Carbonization Co.
Reilly Tar & Chemical Co.
White Tar Co.

COLORS

Fezandie & Sperrle
Pylam Products Co.

CONTAINERS AND CLOSURES

American Can Co. (Tin Cans and Steel Pails)
Anchor-Hocking Glass Corp. (Closures and Bottles)
Continental Can Co. (Tin Cans)
National Can Co. (Cans)
Owens-Illinois Glass Co. (Bottles and Closures)
Wilson & Bennett Mfg. Co. (Steel Pails and Drums)

DEODORIZING BLOCK HOLDERS

Clifton Chemical Co.
Fuld Bros.
Hysan Products Co.
National Sanitary Chemical Co.

INSECTICIDES, SYNTHETIC

American Cyanamid & Chemical Corp.
Associated Chemists, Inc.
Rohm & Haas Co.
Whitmire Research Corp.

MACHINERY

Anthony J. Fries (Soap Dies)
Houchin Machinery Co. (Soap Machinery)
Huber Machine Co. (Soap Machinery)
International Nickel Co. (Monel Metal)
R. A. Jones & Co. (Automatic Soap Presses and Cartoning Machinery)
Karl Kiefer Machine Co. (Filling Machinery)
Koppers Company (Coal Tar Plants, Power Plants, Valves, Castings, Pipe, Tanks)
Mixing Equipment Co. (Tanks, Mixers)
Proctor & Schwartz (Dryers)
C. G. Sargent's Sons Corp. (Dryers)
Sprout, Waldron & Co. (Mixing, Conveying, etc.)
Stokes & Smith Co. (Pkg. Machy.)

Raw Material and Equipment Guide

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MACHINERY, USED

Consolidated Products Co.
Newman Tallow & Soap Machinery Co.

MISCELLANEOUS

American Colloid Co. (Bentonite)
American Standard Mfg. Co. (Wax Applicator)
Anchor-Hocking Glass Corp. (Metal Caps)
Barnsdall Tripoli Co. (Pumice—Tripoli)
Dow Chemical Co. (Germicides, Agricultural Insecticides, Fumigants)
Filtrol Corp. (Purifying and Decolorizing Clay)
Flour City Brush Co. (Brushes)
Garnet Chem. Corp. (Drip Machines)
General Petroleum Corp. (Naphthenic Acids)
Hercules Powder Co. (Pine Oil and Rosin)
Industrial Chemical Sales Div. (Decol. carbon, Chalk)
Innis, Speiden & Co. (Fumigants)
Koppers Company (Coal, Coke, Roofing Materials)
Lenape Trading Co. (Waxes)
Lucidol Corp. (Bleaching Agents)
Pacific Coast Brush Co. (Brushes)
Pennsylvania Refining Co. (White Oils)
Pylam Products Co. (Lathering Agent)
S. Schwabacher & Co. (Naphthenic Soaps, White Mineral Oils)
Socony-Vacuum Oil Co. (Naphthenic Acids)

OILS, FATS, AND FATTY ACIDS

Eastern Industries
Independent Mfg. Co.
Industrial Chemical Sales Div.
Leghorn Trading Co.
Murray Oil Products Co.
Newman Tallow & Soap Machinery Co.
Orbis Products Corp. (Stearic Acid)
Wecoline Products Co.
Welch, Holme & Clark Co.

PARADICHLORBENZENE

John A. Chew, Inc.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Hooker Electrochemical Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.

PERFUMING MATERIALS

American-British Chemical Supplies
Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
Dow Chemical Co.
P. R. Dreyer, Inc.
E. I. Du Pont de Nemours & Co.
Felton Chemical Corp.
Firmenich & Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
Magnus, Mabee & Reynard, Inc.
Monsanto Chemical Co.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Ungerer & Co.
Van Ameringen-Haebler, Inc.

PETROLEUM PRODUCTS

Deodorized Insecticide Base, White Oils, Petroleum, Paraffine Oils, Residues, etc.)

Atlantic Refining Co.
Pennsylvania Refining Co.
Petroleum Specialties, Inc.
S. Schwabacher & Co.
L. Sonneborn Sons

PHOSPHATES

Trisodium, Sodium Pyrophosphate, etc.

American Cyanamid & Chemical Corp.
John A. Chew, Inc.
E. I. du Pont de Nemours & Co.
General Chemical Co.
Monsanto Chemical Works
Victor Chemical Works
Warner Chemical Co.

PYRETHRUM AND DERRIS PRODUCTS

Insect Flowers and Powder, Pyrethrum Extract, Derris Products

Associated Chemists, Inc.
Derris, Inc.
S. B. Penick & Co.
R. J. Prentiss & Co.
McCormick & Co.
McLaughlin, Gormley, King Co.
John Powell & Co.
Whitmire Research Corp.

SILICATES

E. I. du Pont de Nemours & Co.
General Chemical Co.
Philadelphia Quartz Co.
Standard Silicate Co.

SOAP DISPENSERS

Bobrick Mfg. Co.
Clifton Chemical Co.
Fuld Bros.
Garnet Chem. Corp.
Hockwald Chemical Co.

SPRAYERS

Breuer Electric Mfg. Co. (Electric)
Dula Mfg. Co. (Steam Vaporizers)
Fumeral Co. (Spraying Systems)

WAXES AND GUMS

Carnauba, Shellac, Candelilla, etc.
American Cyanamid & Chem. Corp.
General Dyestuff Corp. (Waxes)
Innis, Speiden & Co. (Waxes)
MacLac Co. (Shellac)
Mantrose Corp. (Shellac)
Twin City Shellac Co. (Shellac)

Professional Directory

Index to Advertisers

For product classification see pages 127 *and* 128

* For further details see announcement in 1939 SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.

Tale Ends

LAST week, the editor fainted! A subscriber to whom he had sent some information, wrote him a letter of thanks. This rare occurrence was just too much for the old boy!

* * *

Warning! The Jap beetle season may be over this year, but the Federal Trade Commission's open season on label and advertising claims is just beginning. How about your labels?

* * *

Some soapers we know filled up their tanks with oils at the low prices of a month or so ago to the point where they were positively bulging. And who ever lost money on coconut oil under three cents?

* * *

For fourteen consecutive years, the circulation of *Soap* has shown an increase every year. It is now almost *four times* as great as it was in 1925.

* * *

With most state legislatures adjourned, and Congress long since away from Washington, maybe business will soon begin to lift up the lid of the storm cellar and peek out.

* * *

Is a liquid soap shampoo a cosmetic or a soap? Some Government officials say it's a cosmetic, while some soapers say it's a soap. Only time will tell what it really is. Officially, so far, it's a cosmetic even though it is only a solution of potash soap.

* * *

As far as the manufacturer is concerned, the 1939 insecticide season is past and forgotten,—and 1940 is just around the corner. In view of raw material costs, maybe slightly higher prices for 1940 would not be a bad idea.